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Important Developments Regarding Imports

Import Committee of the American Paper Industry, Which Has Been Specially Active on Behalf of the Domestic Industry, Announces Satisfactory Progress Involving the Pending Reciprocal Trade Agreements With Belgium, Haiti, Canada and Cuba—Recent Customs Rulings of Interest to the Paper Industry

The last month has witnessed some important developments involving imports of paper to the United States, according to a report issued by the Import Committee of the American Paper Industry, which has been active in behalf of the domestic industry in all of the cases referred to.

Developments involving the pending reciprocal trade agreements are listed as follows:

Belgium

After a month's delay, during which time efforts were made by affected American industries to prevent the reduction of duties on Belgian merchandise, the Belgian reciprocal trade agreement was formally proclaimed on April 1, effective on May 1. The proclamation announced that various countries, including Canada, now discriminating against the United States, will only be allowed the benefit of the new low rates for six months unless they meanwhile enter into trade agreements with this country. Those countries, including Germany, which have formally denounced existing treaties, will cease to benefit by the Belgian rates after the present treaties are abrogated.

Haiti

The conclusion of a trade agreement with Haiti is announced, effective upon ratification by Haiti. This agreement makes no concessions on United States exports of paper to Haiti, though such concessions had been asked by the American Paper Industry.

Canada

The American Paper Industry made a strong presentation of its attitude on reciprocity with Canada when the formal hearing was held on March 18. Unless true reciprocity was to be effected, the paper industry expressed its opposition to any change in existing conditions with regard to trade with Canada.

Cuba

The first four months of trade under the Cuban reciprocal trade show a material increase in the volume and value of paper exports from the United States to Cuba. Nearly every grade of paper benefitted by the reduced rates granted by Cuba, and the increase is presumably a diversion of purchases formerly made in Europe or Canada.

Recent Customs Rulings

The Commissioner of Customs has issued a ruling that Customs officials are to consider colored and other ground wood papers dutiable, if they are of such kinds or colors that they are not clearly standard newsprint. The burden of proof that such papers are chiefly used by newspapers is to be placed on the importers.

The United States Customs Court has rendered a series of two decisions in which a renewed effort of importers of bristol to secure a low duty rate is once more defeated. In the case of bristol, the merchandise was calendered and the claim was made that it was paperboard, calendered or coated, and therefore more specifically provided for at a duty rate of 30 percent than as bristol. The Customs Court upheld this contention. The second case involved X-Ray screens, in which high priced chemicals are used with a cardboard base. The importers claimed this merchandise was coated paper, but the Customs Court holds that it is dutiable as coated cardboard.

H. R. Cantine Heads Martin Cantine Co.

SAUGERTIES, N. Y., April 8, 1935—At a special meeting of the Board of Directors of the Martin Cantine Company, held April 1, 1935, for the purpose of filling vacancies caused by the death of Martin Cantine, president of the company, recently, the following officers were elected: President, Holley R. Cantine; treasurer, Lewis F. Fellows; secretary, Fred C. Fonda.

To Open Government Paper Bids May 20

WASHINGTON, D. C., April 10, 1935—The Joint Congressional Committee on Printing has authorized the opening of bids on May 20 for a six months supply of paper for the Government Printing Office for the period beginning July 1, next. On May 27, the Committee will meet to consider awards.

Rieser Co. Installs Second Paper Machine

A second paper machine is being erected at the mill of the Rieser Company in Shamokin, Pa. This machine represents the latest type for the manufacture of cleansing tissues. The machine was manufactured by Bagley & Sewall Company, Watertown, N. Y., with Kurt Wandel of New York as consulting engineer.

Wisconsin Anticipates Heavy Pulp Movement

Heavy Rafting Activities Across Lake Superior From Canada Expected Shortly—Collector of Customs Henry Schwalbach At Milwaukee Reports Early Registration of Foreign Pulp Imports Are Ahead of Corresponding Period Last Year

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 8, 1935—Heavy movement of pulp and pulpwood is anticipated at Wisconsin ports on the Great Lakes during the navigation season. Shipping resumed on Lake Michigan three weeks earlier than last year.

Superior Spruce Company has begun rebuilding its loading hoist at Ashland, Wis., preparatory to heavy movements of wood by raft across Lake Superior from Canada. The hoist was wrecked by a violent storm last fall, after one season of operation. The Newaygo Tug Line Company is preparing for the rafting activities for its owners, the Consolidated Water Power and Paper Company, and is expected to deliver rafts again to Superior Spruce for reshipment by rail to Rhinelander Paper Company and other purchasers. All of these reloading operations are carried on at Ashland.

The volume of foreign pulp warehoused at Milwaukee, Wis., is expected to show an increase this year. "There should be good movements of wood pulp," said Clarence U. Smith, general manager of the Milwaukee board of harbor commissioners. Early registrations are ahead of the same period last year, according to Henry Schwalbach, United States Collector of Customs. Pulp shipments brought to Milwaukee docks by foreign vessels, mainly from Sweden, have been increasing yearly, and reached their largest total in the navigation season of 1934. Some pulp also reaches Manitowoc, and Green Bay, Wis., Menominee, Mich. and Ashland, Wis., for reshipment to various Wisconsin mills.

Barge shipping of coal to mills of the Fox River Valley from the docks at Green Bay Wis., will start about May 1. Navigation will be opened officially April 15, but Ben Prugh, manager of the Fox River Navigation Company, says spring thaws have made the water too high and movement of boats is impeded too much.

Floods Subside

Mills have experienced no further difficulty from floods, after the rampage of the Wisconsin river two weeks ago. The swollen Wisconsin and Fox rivers have been given free flow by opening practically all the sluice gates on control dams. The upper Wolf river is still spread out over a large area of farm land, but the situation is being relieved by lowering the level of Lake Winnebago at the control dam at Menasha, Wis. The Wolf river supplies water to the lake through the Fox river.

Conditions this year have led to energetic prosecution of appropriations in Congress to build more reservoirs for storage of surplus water in peak seasons, and for release of such waters during the midsummer dry season. It is believed surveys will be made on the upper Wolf river to accomplish this. Surveys also are being made for impounding waters of the Eau Claire river, where the Sterling Paper Company is located at Eau Claire, Wis., with a dam and lake north of Augusta, Wis.

Power Dam Program Progresses

Wisconsin Valley Improvement Company and the Consolidated Water Power and Paper Company are making progress with the fifteen million dollar reservoir and power dam program for the Wisconsin river. At a hearing at Rhinelander, Wis., on the first of the reservoirs at Rainbow Rapids, no opposition was encountered by resort men, property owners and sportsmen. The reservoir would impound nearly two billion cubic feet of water and flood approximately 5,522 acres of land, but the only stipulation requested was that the land be cleared before flooding to prevent eyesores during low water periods. More than 1,000 signatures were attached to petitions urging approval of the project by the Wisconsin Public Service Commission, due to the employment it would afford, and the enhancement it would give the summer resorts in the vicinity.

Bond issues of $8,500 each were approved by the townships of Green Valley and Berger, in Marathon county, Wis., for bridges to be built when another section of the program, the construction of a reservoir on the Big Eau Plaine river, gets under way. The two bridges will cost $17,500 but the county will assume half of the cost.

Co-Operative Forestry Plans

Plans whereby the federal government would enter into co-operative forestry and lumbering management with the owners of valuable timber lands in the Ottawa National Forest area in Upper Michigan were discussed at a meeting of E. W. Tinker, regional forester, and representatives of these firms at Milwaukee, Wis., last week.

Firms represented control 61 per cent of nearly 2,000,000 acres of land on the Michigan peninsula. The land covers most of four counties, and includes 500,000 acres of virgin timber.

Under the plan discussed, the government would enter into co-operative management with the land's owners. Timber would be cut selectively and new trees planted in order to prevent the spoilation resulting from privately controlled lumbering operations.

Among those attending the conference were D. Clark Everest, general manager of the Marathon Paper Mills Company, Rothschild, Wis.; Jack Mylrea, Thunder Lake Lumber Company, Rhinelander, Wis., and F. E. Sensenbrenner of Bonifas Lumber Company, a subsidiary of Kimberly-Clark Corporation.

News of the Industry

Leslie L. Koons, of Ashland, Wis., sales representative of the Marathon Paper Mills Company's carton division, the Menasha Products Company, Menasha, Wis., has been transferred from the east to a western territory. He will have charge of Utah, Nevada, Idaho, Wyoming and Montana, and expects to engage in his new field immediately.

Norman C. Plier, chemist for the Wausau Paper Mills Company, Brokaw, Wis., for the last five years, and Miss Winifred J. Nelson of Amherst Junction, Wis., were married last week at the bride's home. They will be at home after April 10 at 713 Fulton street, Wausau, Wis.

James O'Melia, well known lumberman and pulpwood operator of Rhinelander, Wis., was killed last week in an automobile accident near Shawano, Wis. He lost control of his car when a rear tire blew out, and it was wrecked in a ditch.

Bondholders of Abitibi Co. to Meet in Toronto

Will Consider Appointment of a Committee to Represent First Mortgage Board in Pending Court Proceedings—Consensus of Opinion Seems to Be That Reorganization Should Be Delayed—L. F. Winchell Heads Ontario Paper Makers Safety Association

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ontario, April 8, 1935—The Supreme Court of Canada has approved a meeting of the first mortgage bondholders of the Abitibi Power and Paper Company, Limited, to be held in Toronto on June 7 to consider appointing a committee to represent the bonds in "pending court proceedings." The immediate reason for the meeting is that the term of the old bondholders is nearing an end. When G. T. Clarkson, receiver and manager, Toronto, was first appointed the bondholders' committee applied for and gained the right to be a party to all proceedings so that operations and court orders could be continually under review as a measure of protection to interests of bondholders. With a new committee to be appointed this right will have to be applied for again as a necessary step to secure continuance of representation of bondholders.

Regarding reorganization of the company of which a great deal has been heard of late it would seem that those in closest touch with the bondholders, are of the opinion that such a step should be delayed for two reasons, one being the present unsettled conditions prevailing in the industry and the other the doubtful price outlook. It is stated that earnings on the existing tonnage at present do not form a basis for reorganization and that some new legislation may be required as well to provide for new securities. Before reorganization takes place the requirement for money will probably be substantial and the plan must take this need into consideration.

It is also declared that working capital will have to be strengthened and the position generally improved. On the whole, it would seem that the time is not ripe for reorganization and the term "pending court proceedings," which has been inserted in the official notice calling the meeting of the first mortgage bondholders on June 7, refers to the normal recourse to courts necessary under receivership.

Paper Makers Safety Association Meets

At the annual meeting of the Ontario Pulp and Paper Makers Safety Association which was held recently in Toronto, L. F. Winchell, of the Hinde and Dauch Paper Company of Canada, Ltd., Toronto, was re-elected president for the coming year, W. S. Barber, of Provincial Paper, Ltd., Toronto, vice-president and D. B. Chant, Toronto, secretary-engineer. The directors for 1935 were all reappointed as follows—J. H. Albert, J. R. Booth, Ltd., Ottawa; B. F. Avery, Abitibi Power and Paper Company, Ltd., Toronto; John Ball, Beaver Wood Fibre Company, Ltd., Thorold; George Barber, Spruce Falls Power and Paper Company, Ltd., Kapuskasing; A. T. Brown, E. Pullan, Ltd., Toronto; George Carruthers, Sr., Interlake Tissue Mills, Ltd., Toronto; W. L. Eliason, Ontario Paper Company, Ltd., Thorold; D. McLeod, Kenora Paper Mills, Ltd., Kenora; J. E. Patterson, Abitibi Power and Paper Company, Ltd., Toronto; George W. Pauline, Alliance Paper Mills, Ltd., Merritton; C. B. Thorne, Canadian International Paper Company, Ltd., Hawkesbury; N. E. Wainwright, Don Valley Paper Company, Ltd., Toronto; A. T. Whealy, Corrugated Paper Box Company, Ltd., Leaside; and J. S. Wilson, Dryden Paper Company, Ltd., Dryden.

Encouraging reports were presented on the progress and development of the work during the past year and the trophies for accident prevention and first aid teams were presented as follows:

Class "A" Mills—Winner—Howard Smith Paper Mills, Ltd., Cornwall, with a total of 15 accidents, 329.5 days lost and a severity rating of .295. Runner-up Hinde & Dauch Paper Company of Canada, Ltd., Toronto plant, with a severity of .301.

Class "B" Mills—Winner—London Shipping Containers, Ltd., London, Ontario, with a perfect record of no accident during 1934. Runner-up Thorold Pulp Company, Ltd., Thorold, Ontario, also with a perfect record.

First Aid Teams Contest—Winner—team of Alliance Paper Mills, Ltd., Merritton, consisting of Messrs. Rowdon, McGill, Hoare, Cowley and Hitchcock with a total score of 97 points out of 100 possible. Runner-up—No. 2 Team Hinde & Dauch Paper Company of Canada, Ltd., Toronto, with a total score of 94 points.

Abitibi Operating to Capacity

C. O. Sisler, mill manager of the plant of the Abitibi Power and Paper Company at Sault Ste Marie, Ont., states that the plant was operating to capacity during March and that the prospects for April are very good. At present the company is employing six hundred men in the mill aside from those at work in the bush for the woods department.

With existing wage agreements in the Abitibi Power and Paper Company mill at Sault Ste Marie, Ont., expiring May 1, negotiations between the company and the unions are expected to start in the near future. Preliminaries have begun, the unions having invited twenty-five newsprint manufacturers to join a conference at Montreal to discuss the wages of the industry throughout Canada. At the recent international convention in Buffalo, the International Pulp and Sulphite Workers Union decided to ask for wage increases of seven cents an hour across the wage scale and for a six hour working day, which is already in effect at the Sault Ste Marie plant. At present the wage scale for pulp and sulphite workers ranges from forty-three cents an hour to eighty-five cents while paper makers' wages range from fifty-five cents to one dollar and forty-three cents an hour.

Workers in the bush in the Thunder Bay district are demanding two dollars and a half per cord which is an increase of twenty per cent over the present wage, an eight hour working day from camp to camp, pay and a half for overtime and that the workers be paid every two weeks. These demands will be presented to the Abitibi Power and Paper Company at Sault Ste Marie, Ont.

General News of the Industry

Pulpwood movement over the Port Arthur division of the Canadian National Railways promises to be fifty to sixty per cent greater this year than it was last year. The spring shipments are well under way and several trainloads of pulpwood are being handled weekly over the division. In addition to the product being shipped by rail, a considerable quantity being cut in the Atikokan area is being moved by water routes to points in the United States.

Demand for Paper Fairly Active in Chicago

Fine Paper Section Registers Some Gain, With Book, Cover, Bond and Ledger Papers Stronger —Sulphite Papers Share General Improvement—Coarse Paper Division Displays Strength —Ground Wood Papers In Slightly Better Request

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 8, 1935—Business commentators convening in Chicago this week from outside cities and those right in the midst of the Chicago market both agreed that the past seven days have been fairly satisfactory for virtually all of the lines of paper purveyed in this territory. Volume has not been particularly heavy but reports indicate an approval of the undertone and a feeling of relief that the price structure is going along even better than was expected.

Sulphites had a good week while books and covers showed some improvement. Bonds and ledgers found the Spring market a bit more open with the market itself characterized as "stable." Ground woods did a bit better than last week and reports were more encouraging than last week in all grades affected by the high water up Wisconsin way. Paperboard was about the same. Kraft sales representatives again reported a stronger situation than the kraft jobbers who found buyers slightly hesitant. Waste papers were very quiet, there seeming to be no particular activity in any of the lines.

Important Paper Meetings Held

Chicago again made a substantial bid as the capital of the paper industry during the past week when the Blackstone Hotel, Chicago, was the scene of important conferences involving at least four of the major branches of the industry. The Book Paper Division started the week off with a session of its Executive Committee and Executive Authority on Monday morning, April 1. Also during the morning the Grading Committee of the Division held a conference, while the Coated Paper Committee, the Offset Committee and the Trade Customs Committee took up the remainder of the day with trade discussions centered around stability of the various markets. C. G. Parker, managing director of the executive authority was on hand. Others in attendance, as announced, included A. E. Curtenius, J. N. Bergstrom, G. K. Ferguson, G. H. Mead, R. D. Smith, C. A. Gordon, J. R. Miller, W. T. Schmitt, J. L. Fearing, and other members of the executive board.

With Dr. E. O. Merchant taking care of the details the Ground Wood Paper Manufacturers Association held important committee meetings in the morning and a very well attended general session in the afternoon, which attracted many of the leaders of this division. During the afternoon of April 1 the Writing Paper Manufacturers Association, Emmett H. Naylor, secretary, held a Sulphite Manifold Group meeting at the Blackstone.

The Book Paper Manufacturers Association, on April 2, sponsored a General Meeting, a meeting of the converting committee and of the Envelope Committee, while the Ground Wood Association held an Executive Authority session and a General meeting during the morning and afternoon. The Writing Paper Manufacturers Association sponsored a Sulphite Bond group meeting during the afternoon.

The Book Paper Manufacturers Association convened for its final general meeting on the morning of April 3 to consolidate various expressed opinions in relation to market and business conditions.

On the afternoon of April 3 the Kraft Paper Association Executive Committee met, with S. M. Hudson, secretary of the executive committee, in charge. All of the important kraft manufacturers were reported in attendance at this meeting designed, it is reported, to further stabilize the market as much as possible. The executive committee and the executive authority of the Writing Paper Manufacturers Association held meetings on the morning of April 3 to wind up their weeks work.

The Kraft Paper Association was the only one of the group to carry on into April 4 with the executive committee meeting on the morning of that date and the big general meeting, unusually well attended, featuring the work of April 5.

Dr. Merchant Addresses Paper Salesmen

Dr. E. O. Merchant, in Chicago for the meetings of the Ground Wood Paper Manufacturers Association, was the guest speaker at the Monday, April 1, meeting of the Middle West Division, Salesmen's Association of the Paper Industry. Dr. Merchant discussed a great many things of vital importance to the entire industry and provided the statistics to add to the interest of the session. Following Dr. Merchant's remarks, the association held its usual round table discussion under the direction of R. C. Johnson, vice president of the division. It was, according to members, one of the most valuable and informative meetings yet held.

News of the Trade

"Better Times," the newsy four page sheet published by the Rag Content Paper Manufacturers Association for Rag Content Paper Salesmen, featured the April issue with some interesting reports as to the popularity and value of two widely distributed folders, the one on "Why . . . Rag Paper?" and the other on "Making the Most With the Best." From paper jobbers and others scattered throughout the country came commendatory reports which make interesting testimonials. The issue of "Better Times" also reported that two new folders were being prepared to further secure the help of the sales representatives in popularizing the use of rag content papers. It is interesting to note that merchandising ideas emanating from the minds of the salesmen are most welcome to the association.

The paper industry and those fortunate enough to read the monthly issues of "The Friendly Adventurer," published by Bermingham & Prosser, is going to like the poem in the April issue called "He Who Shoots The Stars." On the third cover of the interesting house organ is a bit of editorial matter on quality service that gives evidence of the changing times—from price to quality and service. The fourth cover contains some information on the use of Peacock Folding Enamel in direct mail. The issue is printed on White High Finish Peacock Enamel and the cover used is White High Finish Peacock Enamel Cover.

With a drawing of a Polar bear to put over the idea of "toughness," the Swigart Paper Company this week announced Riegel's Tufwite Tag, along with some effective copy as to its "clean, smooth, white surface . . . combination of high strength, pure white, moderate price and absolute uniformity and fine printing surface."

Boston Paper Market Conditions Favorable

While Demand for Various Grades of Fine Paper Was Less Active In Early Part of Week, Trading Is Showing Signs of Improvement Again—Kraft Paper Section Very Steady, With Manufacturers Exceedingly Busy During Last Thirty Days

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 8, 1935—Paper merchants as a whole transacted a fair business during the week under review. In some quarters it was reported that fine papers were not quite so active as they had been in the early part of the week, but that they were improving again. One large firm handling index cards has been doing particularly well, with business increasing 300 per cent since October 1. Fancy papers moved fairly well. The general feeling in regard to kraft papers is that the market will hold. In some cases kraft manufacturers have more orders than they can fill very soon. It is rather well known that kraft mills have been exceedingly busy in the last thirty days. The paper bag situation is reported to be complicated by keen competition between two companies of this vicinity. Box boards were in fair demand.

The paper stock market was slightly more active, prices continuing steady practically throughout the entire list. France has placed an embargo on all paper stock. The reaction here, if any, has been to stiffen the market. Mixed papers, under old papers, remained at .17½ @ .20. Bagging continued firm in all lines. New and old domestic rags moved in fair volume, with roofing rags in lively demand. The same situation prevailed in foreign rags as previously, with a small amount of activity.

The cotton twine industry is seriously affected by the processing tax. It is impossible to make polished twine out of pure cotton.

News of the Trade

A sales meeting was held at the office of Carter, Rice & Co. Corp., Saturday morning, with Frank Borchers and Wilson D. Rogers, of the Oxford Paper Company, Rumford, Me., as guest speakers. They presented the advertising and sales promotion program for 1935 to the sales staff of Carter, Rice & Co.

Supplementing their own sales activities on Corroflex, Carter, Rice & Co. Corp., have installed a large and attractive window display on the street floor of their building at 250 Devonshire street, which practically demonstrates the suitability of this product for packaging purposes. Passers by are invited to the salesroom on the second floor to test Corroflex for themselves.

The sales meetings of Stimpson & Co., Inc., are resulting very successfully. At a general meeting Saturday, W. H. Loud summed up previous meetings.

Arthur C. Hall, treasurer of John Carter & Co., Inc., is expected to return next week from a vacation at St. Petersburg, Fla.

Arthur E. Ham, head of the Ham Paper Company, is confined to his bed by serious illness at his residence in Somerville.

William N. Stetson, president and treasurer of Storrs & Bement Company, is enjoying a vacation at Pinehurst, N. C.

John H. Brewer, vice-president and general manager of Storrs & Bement Company, is well on the way to recovery from an operation for appendicitis at the Quincy Hospital, Quincy, Mass.

H. H. Rutter, of Rutter & McNaught, Inc., has returned from the South.

Thomas K. Bradford, New England representative of the Wheeler Paper Corporation, Albany, N. Y., is in a hospital as the result of an accident.

Frank E. Taylor, vice-president and general manager of the Advertisers Paper Mills, Holyoke, Mass., and H. J. Davis, treasurer of the Davis Paper Company, West Hopkinton, N. H., called on the trade last week.

Philip Carey Mfg. Co. Makes Good Report

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, April 8, 1935—Improvement in sales and profits of the Philip Carey Manufacturing Company, roofing manufacturers of Lockland, Ohio, is due largely to modernization of homes under the National Housing Act program, according to George D. Crabbs, President. The company showed net profit of $146,740 for 1934, compared with net profit of $50,793 in the preceding year, he announced each week.

The company's balance sheet, dated December 31, shows total current assets of $5,272,350 and total current liabilities of $1,759,528; at the end of 1933 current assets were $4,627,710 and current liabilities $1,215,265. Total net assets are listed at $15,802,749, after all reserves. Net surplus of $4,528,103 is reported. Sales in 1934 increased 23 per cent over 1933.

"The most encouraging feature of the year's operations," Mr. Crabbs said, "was the ability of the company to show substantial gains in sales and profits over 1933, notwithstanding the company is engaged exclusively in the durable goods industry, and depends to a large extent for its volume on building construction of all kinds.

"Modernization of homes throughout the United States during the last half of 1934, due to the National Housing Act, was very beneficial to the company's volume and much greater results are expected to be enjoyed by the company through the National Housing Act on modernization work and the building of new houses during the year 1935.

"The company was perhaps the first in the industry to establish its own finance plan throughout the United States, having entered the field on "character loans" for the modernization of homes in 1930."

J. L. Renehan Sails for England

TROY, Ohio, April 8, 1935.—J. L. Renehan of this town, who has been well known in technical and manufacturing circles of the gumming industry for the past ten years, sails Friday night, on the Olympic for several weeks stay in England and Scotland.

He will act in an advisory capacity to the Clyde Paper Company, Ltd., in connection with some new gumming papers they are developing for their trade. They are one of the oldest and largest of the British paper companies and operate several plants making different kinds of paper in addition to their coating and gumming interests.

Upon his return, Mr. Renehan will assume his new duties with the Hudson Bag Corporation, of New York.

Recent Westinghouse Developments for the Pulp and Paper Industry

By R. R. Baker[1]

During the past year, rising material and labor cost have made it necessary for pulp and paper mill operators to look to improvements in methods of operation and equipment in order to maintain profits at the reduced production schedules now in effect. All of the operating units which with the present production schedules, are kept in production, must be of the highest order of efficiency consistent with modern equipment and processes. In line with these considerations there continues to be an increasing interest in all types of equipment which will permit of higher operating efficiency and reduced cost of operation.

Cylinder Machine Wet End Drive

Many mills have recently shown an interest in the possibilities with wet end sectional drive. Although the first drives of this type were introduced a number of years ago, it remained for the present operating conditions to create a wide spread demand for this particular type of drive.

Individual motor drive for the wet end of cylinder machines, by relieving the wet end felt of all unnecessary strains, assures economies in operation, as well as improved and more uniform paper quality. Although the original drives of this type were installed on machines equipped with sectional electric drive, suitable synchronizing arrangements are now available, which make it possible to provide the lineshaft driven cylinder machine with this modern form of drive.

A drive of this type recently built for the 145 inch 8 cylinder machine of the Alton Boxboard and Paper Company of Alton, Ill., has some important improvements over previous drives. The section motors and the power supplying generator, which are totally enclosed and forced ventilated to protect them against the moisture conditions common to the wet end of the paper machine, are each provided with thermoguard protection, consisting of a thermostat mounted on the motor or generator windings. The main power circuit from the generator, which is driven from the first press section, to the section motors, is provided with an AB De-ion circuit breaker having thermal inverse time element no fuse overload protection. Each individual motor circuit also has the same type of circuit protection. The generator and motor thermoguards are accurately adjusted for normal motor temperatures, and the main and individual circuit breakers are set with considerable margin, so that they will only function to protect against extreme overloads or short circuit conditions.

The generator and motor thermoguards are arranged to actuate an alarm and by means of special relays and indicating lamps mounted at each control station, to indicate, in case of overload conditions on any unit, where such overload exists. This arrangement of overload protection assures maximum continuity of operation on the machine, as it prevents any unnecessary shutting down of the equipment and permits the operator to quickly detect and correct any condition causing overload on any of the units. The thermoguards at the operating units also afford an ideal type of protection, as the generator and motors, in addition to protection against sustained overloads, are protected against high ambient temperatures or failure of ventilation, features which are not available in the standard current type of overload protection. The no fuse circuit protection provided with the AB De-ion circuit breakers also prevents production delays resulting from either blown fuses or improper fusing.

[1] Member TAPPI, Industrial Application Engineering, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Coating Machine Drives

Sectional electric drive for the individual sections of the coating machine eliminates long lineshafting with clutches and belt drive and makes possible higher economies in the operation of these machines. Draws can be readily adjusted and the machine can be quickly set for a suitable threading speed and returned to productive speeds. Meters on the various sections accurately indicate the operating conditions and serve as safeguards against equipment failure and production delays. The use of adjustable voltage d. c. equipment together with the elimination of lineshaft and mechanical drives assures low power consumption over the complete operating range of these machines. A number of these drives have been recently supplied to manufacturers of coated paper.

Additional features which can be secured with this type of drive are automatic "loop" control of the sheet and automatic tension control of the reeling operation.

Loop control consists of an electronic regulator which, through the use of a light beam and a photo-electric cell operating electronic relays, serves to hold a fixed length of loop in the paper on entering the drier, thus permitting high speed operation and preventing damage to the sheet.

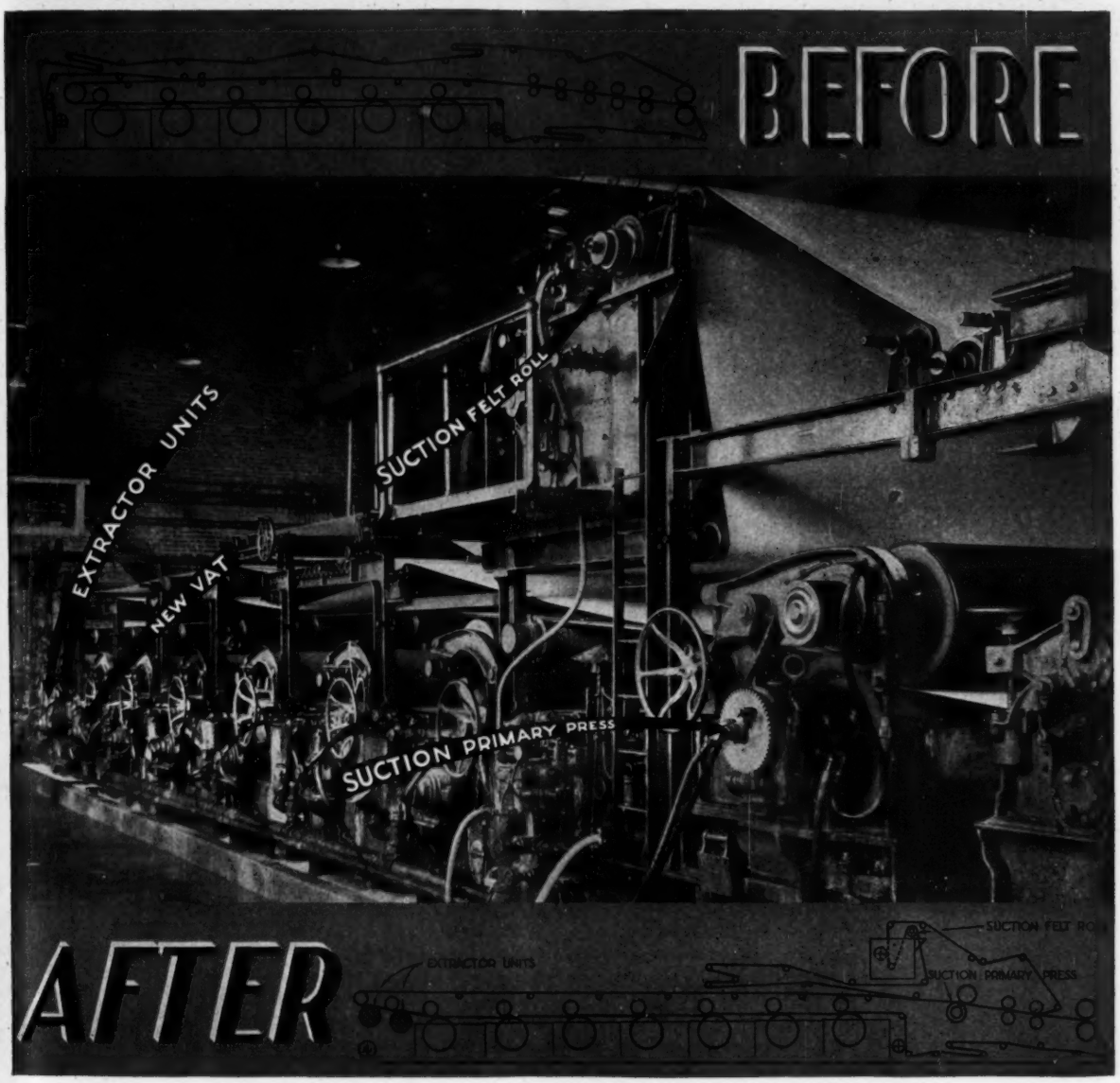
The tension regulator on the reel consists of a special current regulator, which serves to adjust the shunt field of the d.c. reel motor, maintaining the correct speed for constant tension as the reel builds up from the empty core to a full roll. This form of reel drive eliminates the conventional slip belt with its high maintenance and power losses, and assures properly wound rolls with a minimum of attention from the operators. By means of an adjusting rheostat and motor ammeter, the tension in the sheet can be accurately adjusted and after being adjusted is maintained by the regulator, which serves to automatically adjust the speed of the reel drive to compensate for the changes in diameter from an empty to a full reel.

This form of drive can be provided for either sectional electric or lineshaft driven equipment with any form of machine where core reeling is required such as paper machines, coating machines, or special treating machines. Where a suitable source of adjustable voltage is not available for the reel motor drive it can be obtained by driving a d.c. generator from the machine lineshaft.

Centralized Board Mill Control

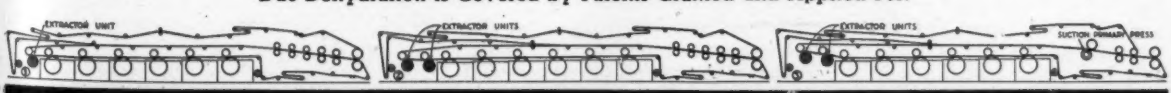
A centralized control for pulping operations affords many advantages in the modern plant. A control of this type was recently furnished for the Gardner Richardson Company of Lockland, Ohio. In this installation all control stations for pumps, jordans, beaters, stock valves, etc. are located on a central control board, with the process equipment diagrammatically laid out and with indicating

DOWNINGTOWN



"Rome wasn't built in a day" and likewise, it is not necessary to change over to a complete Downingtown Duo-Dehydrating Press Part in order to obtain immediate, appreciable benefits. You can gradually modernize on the "Add-a-Roll" scheme as pictured, by first installing an Extractor Unit (See Diagram 1), then another Extractor Unit (2), then eliminate the battery of primary presses and add a Suction Primary Press (3), then add a Suction Felt Roll and a new vat, if desired (4) etc., etc. Each step in this installment modernization produces marked benefits which rapidly justify the next step toward complete Duo-Dehydration. The Downingtown Mfg. Co., Downingtown, Pa.

Duo-Dehydration is Covered by Patents Granted and Applied For.



No Board Machine is Modern *Without* DUO-DEHYDRATION

pilot lights and meters showing the operating conditions of each of the various units required in the process. The board indicates the operating position of the valves, the level of stock in the chests, the operating load of the jordan motors and the hydrostatic pressure in the jordans. A supervisory control of this type permits of an accurate control of the product thus assuring uniform and uninterrupted production.

Log Carriage

A recent installation at the Washington Pulp and Paper Company, Port Angeles, Wash., of an electric driven log carriage, permits of operating economies impossible with the older form of steam driven equipment. This electric drive includes a 115 h.p. 77 r.p.m. d.c. reversing motor with a 100 kw. induction motor generator set for supplying power to the d.c. motor and suitable control. The motor is equipped with a rope sheave mounted directly on the motor shaft. The carriage is driven back and forth by ropes attached to each end, operating over idler pulleys and attached to the sheave. A motor mounted magnetic brake is provided for holding and for emergency stopping. Both the d.c. generator and motor are designed for commutating heavy peak currents during acceleration and deceleration in order to permit rapid reversal of the load. The equipment is capable of developing a maximum rope pull of 18,000 pounds and making 7 cuts requiring 14 reversals per minute when operating on logs approximately 24 feet in length. The speed and direction of operation of the equipment are controlled by adjustment of the voltage and polarity of the d.c. generator. By a special arrangement of the control the rate of acceleration and deceleration is maintained at the maximum value regardless of the adjustment of the cutting speed. The control consists of an 8 point forward and reverse drum type master switch with individual control switches for backing out of the limit switch in either direction of travel and for emergency stopping, which equipment will be mounted at the Sawyers control station, a control cabinet arranged for separate mounting which contains the d.c. control equipment and resistance assemblies for the generator field circuit and for dynamic braking and limit switches for each end of the carriage travel. The equipment has been designed to obtain the maximum production with a minimum of maintenance and operating cost.

Gearmotors

Gearmotors are finding increased application in the pulp and paper industry. Last year the Westinghouse Company announced a complete line of these gearmotor units with all types of motors in rating ½ to 75 h.p. and output speeds from 15 to 1550 r.p.m. This line includes both single and double reduction units with ratios up to 40 to 1. A triple reduction unit has now been added to the line permitting of ratios up to 200 to 1. These triple reduction units are available in ratings up to 15 h.p. and output speeds as low as 4½ r.p.m. The same type of construction has been applied to the triple reduction as to the single and double reduction units, thus assuring low cost, reliable performance and a sturdy compact high efficiency unit. For vertical agitator shaft and similar drives the gearmotor units can be furnished with vertical low speed shaft extensions.

Recently certain mills have installed induction gearmotors on beaters and jordans, after a careful cost analysis indicated that high speed gearmotors having equal overall efficiency and having the added advantage of higher power factor, could be installed at a lower cost, thus keeping the plant investment in generating and transmission equipment at a minimum.

Refiner Drives

For certain types of stock, the attrition mill offers advantages over other methods of refinement. Adequate motor protection is essential for this application where frequently the motors must operate continuously in dust and moisture laden atmosphere. The Westinghouse Company recently built motor and control equipment for five of these refiners supplied by Bauer Brothers Company of Springfield, Ohio, to be installed in the plant of the Wood Conversion Corporation of Cloquet, Minn., and are now building motor equipment for units to be supplied by Sprout Waldron Company of Muncie, Pa., to be installed in the plant of the Southern Extract Company at Knoxville, Tenn.

The motors, two of which are required per unit, are totally enclosed and arranged for forced ventilation. This type of construction assures adequate motor protection against dust or moisture and at the same time assures adequate motor ventilation. With this arrangement of ventilation, the air is delivered to the motors under pressure and both the air intake and outlet can be located at satisfactory positions, some distance from the motors, which is a condition which frequently cannot be met with a totally enclosed self ventilated motor. Furthermore admission of the air to the motor under pressure prevents any infiltration of dust which might otherwise occur with other types of ventilation.

The motors for the Wood Conversion Corporation plant are of the footless construction, with the frames supported by special brackets from the pedestal bearings supplied as a part of the refiner. An air intake connection is provided on one bracket and the bracket on the other end is totally enclosed. The air after passing over the motor windings is discharged from the sides of the motor frame. These motors are rated 100 h.p., 1160 r.p.m.

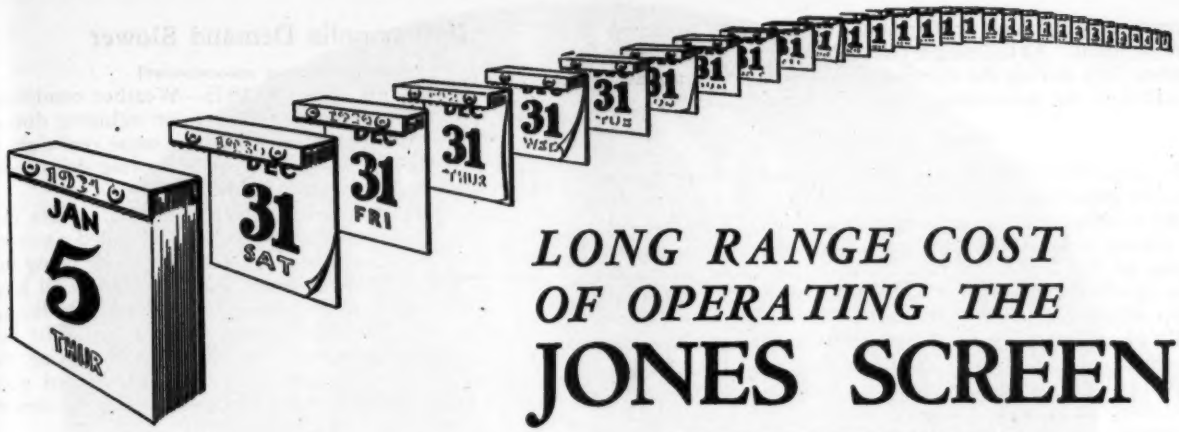
The motors for the Southern Extract Company plant are being supplied with engine type parts only. The motor frames are provided with frame feet for mounting on the refiner bedplate. Dummy end shields equipped with air intake connections, which serve to totally enclose the motor, are provided for both ends of the motor. The air which is admitted at both ends is discharged at the sides of the motor frame after passing over the motor winding. These motors are rated 100 h.p. 1750 r.p.m.

Synchronous Motors

To meet the requirements of heavy starting torque in mills having a limited starting current capacity, a new and relatively inexpensive type of low and medium speed synchronous motor has been developed. This motor delivers high torque throughout the starting period, however it draws low enough current from the line so that it may be applied to practically any private power system.

This improved starting performance is obtained at a minimum cost by a simple modification of the standard type of synchronous motor damper winding. With this modification the major portion of the bars are connected to common end rings in the usual manner. One or two bars at the center of each pole are connected in one single phase circuit and brought out through two slip rings to a single external resistor. By adjustment of this resistor the torque as well as the current input to the motor may be controlled within certain limits much as with the wound rotor type of induction motor.

This new motor design can be arranged to start directly across the line with no auto-transformers or reactor, resulting in the simplest form of main circuit control. Proper adjustment and control of the resistance in the single phase damper winding assures the development of



LONG RANGE COST OF OPERATING THE JONES SCREEN *Proves EXTREMELY Low*

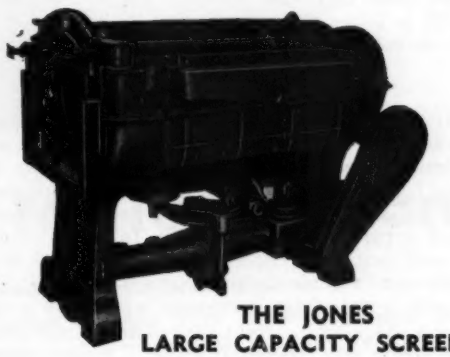
ECONOMICAL and Efficient performance of the Jones Screen is attained over a long period of time because of its simplified, sturdy construction, and advanced operating features that assure a minimum of maintenance, year after year.

Among its many exclusive mechanical features are:

Wide capacity range from 400 to 6,000 lbs. per hour, permitting a gentle screening action, with no forcing, which allows continuous passage of only clean and uniform fibres.

Smaller cut plates can be used for capacities formerly handled by the smaller screens, thereby reducing dirt count without the use of additional equipment.

The open end drum allows unobstructed flow of accepted stock and permits complete accessibility to screen interior for cleaning purposes.



THE JONES LARGE CAPACITY SCREEN

Many other utility and economy advantages are described and illustrated in our Screen Bulletin. Write for your copy.

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of High-Grade Machinery for Paper Mills

correct starting and accelerating torque with minimum current input. As this single phase damper winding carries current only during the starting period, practically nothing is added to the maintenance cost of operating the unit.

"Angle-Switching"

In connection with the operation of synchronous motors another important development which was recently made is the so-called method of "angle-switching." This method of control assures applying excitation to the synchronous motor at the proper moment so that the motor will pull into synchronism without a reversal of torque resulting from slipping a pole. The control device consists essentially of an impulse generator mounted on the shaft of the synchronous motor and having a fixed relation to the salient poles of the machine, together with a grid controlled electronic relay and the necessary control relays. The electronic circuit is so arranged that the d.c. field cannot be applied until the rotor and rotating flux of the stator are in the correct phase relation. This type of control should prove very desirable on grinder motor applications where damage to the stone can result from a reversal of torque or from too severe an application of torque during the starting period. Also due to the fact that the field is applied at the most favorable moment, the motor can be designed with a lower Kva. input than when standard methods of control are used.

Industrial Analyzer

To simplify the testing of a.c. motor equipment and therefore to assure a better knowledge by maintenance and operating men of operating conditions in the mill, the Westinghouse Company recently developed the "Industrial Analyzer." This is a portable a.c. test set suitable for testing individual apparatus and motors up to 100 h.p., 440 volts. The unit contains a triple scale ammeter, 0-5, 0-25 and 0-125 amperes, a triple range voltmeter, 0-150, 0-300, and 0-600 volts, a polyphase wattmeter with three scales for the above voltage and current ranges and a polyphase power factor meter with 10-100-80 scale. The instrument is self contained and mounted in a carrying case 7x11x19 inches. The complete unit has a total weight of only 28 pounds.

Motor Circuit Protection

A new line of Westinghouse combination a.c. motor starters and AB De-ion breakers affords both motor and motor circuit protection. This combination consists of the standard magnetic across-the-line type starter with the AB De-ion no fuse breaker mounted in a single compact cabinet. The cabinet is available in sheet steel for dust-tight or cast iron for water-tight operation. The magnetic starter provides the standard thermal overload and low voltage motor protection and the AB breaker, which is equipped with thermal overload relay, may be set to protect the circuit and to open instantly under short circuit conditions. The breaker is operated from a handle located on the front of the cabinet which is interlocked so that the cabinet cannot be opened unless the breaker is in the off position. Also the equipment has provision for locking the cabinet closed or locking the breaker in the off position. These features assure the maximum degree of safety to the operators. This combination unit, as it requires but a single service connected to and from the control, can be installed with a minimum of time and expense. The AB De-ion no fuse breaker eliminates all delays which with the ordinary fuse disconnect switch are occasioned by blown fuses or incorrect fusing. Installation, operating and maintenance costs are reduced to a minimum with this type of equipment.

Indianapolis Demand Slower

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 8, 1935—Weather conditions continued to mitigate against the paper industry during the last week. What the trade needs is some real sign of spring. This lack of warm weather is slowing down both the newsprint and fine paper fields.

In these fields, particularly the department stores and specialty shops, all advertising has been curtailed awaiting warmer weather. Some spring merchandise is being advertised of course, but the bulk of the business will have to wait. As it is, however, newspaper advertising lineage shows gains over the same time of last year. The last reports showed only one or two slight losses among the newspapers of the state and most of them showed good gains. A large amount of national advertising is responsible for most of the gains, however.

Demand among some of the container men shows some slight recession from the previous high peaks. In some instances production has been cut and at least in one case men are to be laid off. This factory, however, had been employing too many men for the volume of work with the result that all were getting but part time. The new move is to give those retained much more regular work. Box factories report little change. Demand from some industries continues good and with warmer weather demand should increase. The entire undertone of the market is reported good.

Demand for kraft is steady. Prices are unchanged and are being held steady. Tissue demand is good. Thus far there has been little call for summer specialties. However, the first real warm weather is expected to bring a deluge of orders since there are no stocks in retailers' hands worth considering.

Waxed and other transparent papers are moving steadily and the Indiana factories have about all the business they can do.

Paper stock men report some mill demand, most of it confined to the better grades of both paper and rags. Paying prices continue below what the local trade believes justifiable.

Oswegatchie Mill May Reopen

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., April 8, 1935—Officials of the Wyoming Valley Paper Company, of Northumberland, N. H., spent the past several days here inspecting the property of the Oswegatchie Paper Company on which an option was acquired a few weeks ago. They were accompanied here by representatives of the Bagley & Sewall Company who are understood to be anxious of having the mill in operation. The inspecting officers included James S. Weymss and C. T. Weymss, president and secretary respectively of the New England concern, the trip being the second made within the past month. It is understood that only a few details remain in order to complete negotiations for taking over the property. Considerable interest is being shown here as a reopening would mean employment of about 200 hands.

Algonquin Paper Co. Runs Sulphite Mill

OGDENSBURG, N. Y., April 8, 1935—A report that the sulphite mill of the Algonquin Paper Company was closed was denied this week by officials. It was said that some falling off in production has taken place because of inability to sell in the open markets. However, it will be necessary to maintain operations as long as the paper mill is running, each being dependent upon the other.

It Costs You Money to Tie His Hands

• Every time you refuse your plant engineer's request for replacements you may be tying his hands and costing yourself money. Your plant cannot be operated at maximum efficiency with worn-out or obsolete equipment. Penny leaks grow into dollar losses.

Before you say "no" to plant expenditures make a thorough checkup with your engineer. To minimize interruptions in service and secure general economy in maintenance, assure yourself that valves and fittings are selected for the particular service to be performed, that your piping is properly sectionalized. Guard against the small losses that grow into high production costs.

A new Crane steam trap here, replacement of a pipe line there, may mean the difference between red and black figures on your books. A silk mill in New York state revamped its boiler room, using Crane material exclusively, at an expense of approximately $1,000. It is now operating its plant at a saving of 10% in fuel and has increased plant production 30% *without adding any extra equipment!*

For seventy-nine years, sturdiness and precision of a character peculiarly Crane's have been built into our valves, fittings and fabricated piping. They are distinguished by long and efficient performance.

Crane engineers will gladly co-operate to show you many avenues to plant economy and efficiency. We will send you without obligation our Plant Checkup List. Write for it today.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS NEW YORK: 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

Obituary

George R. Wyman

[FROM OUR REGULAR CORRESPONDENT]

EAST WALPOLE, Mass., April 8, 1935—George R. Wyman, 67, vice-president and general manager of Bird & Son, Inc., East Walpole, Mass., for a number of years, died at his residence, Union Street, April 5.

Mr. Wyman was born in Melrose, Mass., and lived in Dorchester and Boston before removing to Walpole 48 years ago, when he entered the employ of the Bird concern. He had recently been ill and had been under treatment at the Faulkner Hospital, Jamaica Plain, and later at a rest home in Westwood, Mass.

He had been a selectman in Walpole, and member of the school committee, besides taking part in all other civic affairs. He was a member of the Orient Lodge of Masons of Norwood, Mass., Mystic Shrine of Boston and the Boston City Club, and a director of the Walpole Trust Company.

Surviving him are a widow, Mrs. Edith Wyman; a son, George R. Wyman, Jr., of Walpole; two daughters, Mrs. Bessie Bartlett of Sharon, Mass., and Mrs. Alice Rogers of East Walpole; two brothers, Walter E. Wyman of Hingham, Mass., and Martin S. Wyman of Bethel, Vt., and a sister, Mrs. Alice Ralph, of Wollaston, Mass.

Mr. Wyman was a son of the late Martin S. Wyman, head of the Wyman Manufacturing Company, of South Boston, elevator manufacturers.

The funeral was held from the Union Congregational Church, East Walpole, April 7. Burial was at East Walpole.

John S. Reed

WALTHAM, Mass., April 8, 1935—John S. Reed, aged 73, for 25 years treasurer of the St. Croix Paper Company, Woodland, Me., with offices in Boston, died Tuesday, at his residence, 50 Worcester lane, Waltham, Mass. Mr. Reed retired from active business life six years ago.

He was the son of the Rev. James Reed and Mrs. Emily (Ripley) Reed and was born in Boston. His father was pastor of the Swedenborgian Church of Boston for fifty years.

Mr. Reed was treasurer of the Waltham School for Girls and chairman of the standing committee of the Piety Corner Chapel.

Surviving him are his widow, Mrs. Jessie E. (Burbank) Reed; two daughters, Mrs. Francis M. Britt, of Amherst, Mass., and Miss Ruth V. Reed, of Waltham; two sons, James Reed, of the University of Idaho; and Sampson Reed, of Waltham, and two sisters, Mrs. Thomas W. Thatcher, of Brookline, Mass., and Mrs. Harold L. Warren, of Cambridge, Mass.

The funeral was held at the Piety Corner Chapel Thursday. The burial was in Mount Auburn Cemetery, Cambridge.

Nicholas Collignon

KALAMAZOO, Mich., April 8, 1935—Nicholas (Nick) Collignon died of a heart attack on March 29, 1935. Had just walked from the office of Dr. Youngs to his automobile and started to drive away when he was stricken.

Mr. Collignon was superintendent of the Imperial Coating Mill, a division of the Bryant Paper Company, with which company he had been connected continuously for 34 years. He was 58 years old, born at Orchard Place, Ill., April 16, 1877. At the age of 14 he started work in the paper coating mill at that place and remained there six years, then moving to Wabash, Indiana, where he was employed in a similar capacity four years.

In 1901 when the Imperial Coating Mill started operating he came to Kalamazoo with Mr. Schumaker, the superintendent, together with Mr. Presentine, Jacob Kuss, Frank Kress, Jacob Parent, Peter Denner, and Mr. Gadke. He alone remained with the company, having been the superintendent for a score of years.

He was an active member of the Zion Lutheran Church where he had served as vestryman for the past 25 years. Also was an active member of the Paper Mill Superintendents' Association and Kalamazoo Lodge No. 22, F. & A. M.

Besides the wife, Mrs. Henrietta Collignon, he is survived by three daughters, Mrs. Harriet Sadler, Mrs. Clair C. Bell, and Mrs. John McPherson, and two granddaughters, all of Kalamazoo; also four brothers and two sisters residing in Chicago, Ill.

Charles G. Bright

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 8, 1935—Charles G. Bright, chemical engineer of the Kimberly-Clark Corporation, Neenah, Wis., passed away at his apartment at Appleton, Wis. on April 1. He was 44 years old.

Entering the employ of the Kimberly-Clark Corporation January 1, 1915, Mr. Bright was placed in charge of the main laboratory as chief chemist. Later he was placed in charge of the development of specialty papers in a staff capacity and remained in that position. He was born in Washington, D. C. in 1891, and was graduated from the University of Michigan in 1914 with the degree of Bachelor of Chemical Engineering.

Survivors include the widow and his parents, Mr. and Mrs. C. E. Bright, of Washington, D. C. The body was conveyed to Washington for burial in Arlington National Cemetery, since Mr. Bright was a veteran of the World War.

Richard L. Michael

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 8, 1935—Richard L. Michael, who was superintendent for fifteen years of the Wolf River Paper and Fibre Company, Shawano, Wis., died last week at his home at Boulder Junction, Wis. When he retired from the paper mill field four and a half years ago, he engaged in the summer resort business at Boulder Lake. He was 65 years old. Burial took place at Kaukauna, Wis., his former home.

H. W. Driggs

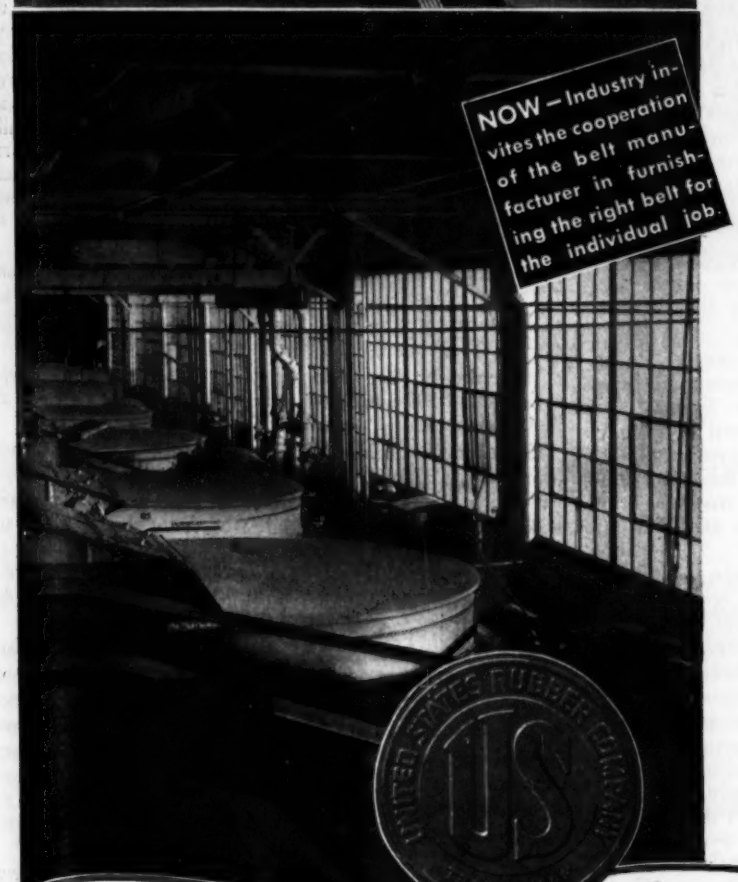
Word has just been received in New York of the death Thursday evening, April 4, of H. W. Driggs, vice president and general manager of Tonawanda Boxboards, Inc., Tonawanda, N. Y.

New Rate on Rags from New York

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 10, 1935—The Interstate Commerce Commission, has granted, on conditions, authority to establish and maintain a rate of 20 cents on rags and scrap or waste paper, in carloads, from New York City stations and points in New Jersey to Newark, N. Y., during the season of navigation on the Erie Canal without observing the long and short haul provision of section 4 of the Interstate Commerce Act.

When muscles bought belts



ONLY ONE FEATURE WAS PROVED . . .

A strong bond between plies is only one factor in over-all belt quality.

ONLY a few years ago buyers thought they could determine belt quality by pulling down a belt's various plies. But we who make transmission belts know that such a procedure merely indicates the strength of the friction rubber.

Any mechanical rubber goods manufacturer may compound strong friction rubber, but it takes a wealth of experience, extensive research facilities and exceptional engineering talent to manufacture belts that will stand up for years under the destructive action of continual flexing, shearing, heat, grit, oil and age.

"U.S." has been signally successful in achieving this end. "U.S." Royal and "U.S." Rainbow belts are famous throughout all Industry for the satisfactory performance accomplished. Extremely long life, freedom from trouble, remarkable driving power and low ultimate cost have won them the high regard of engineers everywhere.

The long experience of "U.S." in advising on the selection of the proper belt, as to quality, ply and cover thickness is available to you without obligation.

United States Rubber Company
1790 Broadway New York, N. Y.
Stocks in all Industrial Centres

U.S. RAINBOW BELTING *An Outstanding Value of the* ***United States Rubber Company***

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Tuscaloosa, Ala.—The Gulf States Paper Company, manufacturer of kraft wrapping papers and kindred stocks, plans expansion at local mill, including enlargement of pulp division. Additional equipment will be installed in last noted department to provide for increase of about 50 tons per day in present capacity. Considerable machinery for this purpose is being removed from another location in the South to local mill.

Bridgeport, Conn.—Remington-Rand, Inc., Railroad avenue, plans considerable increase in carbon paper manufacturing division at local plant, to occupy a portion of new one-story and basement addition, 80x300 feet, for which bids are being asked on general contract. New unit is reported to cost close to $75,000, with equipment. Executive offices of Company are at 205 East Forty-second street, New York, N. Y.

Jersey City, N. J.—The Capitol Paper Box Company, recently organized with capital of $100,000, plans operation of local plant for production of paper boxes and containers. New company is represented by Irving Firestone, 246 Central avenue, Jersey City.

Cathlamet, Wash.—The Crown Willamette Paper Company, Camas, Wash., plans early construction of a new sawmill in the vicinity of Cathlamet, to be used for increased supply of spruce pulpwood for mill at Camas. New unit will develop large log capacity, giving employment to about 35 men. It is expected to have the mill ready for service in July. No estimate of cost has been announced. Headquarters of company are at 343 Sansome street, San Francisco, Cal.

Bogalusa, La.—New plant unit now in course of construction at Bogalusa, to be occupied by the New Orleans Corrugated Box Company, Dorgenios street, New Orleans, La., recently referred to in these columns, will form an extension, one-story, 78x200 feet, to the local mill property of the Bogalusa Paper Company, Inc. It will be owned by the latter organization and leased to the New Orleans Company, which will use it for the manufacture of corrugated paper boxes and containers, securing raw material supply from the adjoining Bogalusa mill. A portion of the unit will be used for storage and distribution. New building is expected to be ready for occupancy at early date. H. J. Cowgill, Bogalusa, is general contractor.

Boston, Mass.—The Star-Peerless Wallpaper Company has arranged for lease of large space in mill No. 2 of the New England Spun Silk Corporation, 342 Western avenue, Brighton, and will occupy for new local plant. It is proposed to have unit ready for service at early date.

New York, N. Y.—The Manat Paper Box Company, Inc., recently chartered with capital of $20,000, plans operation of local plant for the manufacture of paper boxes and containers. New company is represented by Louis Silberstang, 51 Chambers street, New York.

South Windham, Me.—The Robert Gair Company, 155 East 44th street, New York, manufacturer of corrugated boxes and containers, etc., has concluded arrangements for acquisition of plant and business of the Androscoggin Pulp Company, with mill at South Windham, specializing in production of box and folding boards, case liners and kindred materials. Purchasing company will take immediate possession, and is organizing a new company under the name of Androscoggin Paper & Pulp Company, which will operate the plant as a subsidiary interest. The mill will be developed to maximum output by the new owner, using the three paperboard machines now installed for the manufacture of box and special boards for raw material for its line of containers. The local mill management will continue under the direction of E. K. Mansfield, heretofore president and general manager of the Androscoggin Pulp Company.

Indianapolis, Ind.—The Beveridge Paper Company, 717 West Washington street, recently sustained a fire loss at its plant, totaling over $60,000, including equipment and stock. The damage will be replaced.

Phoenix, N. Y.—The North American Paper Corporation has filed notice of change in company name to the North American Pulp and Paper Corporation.

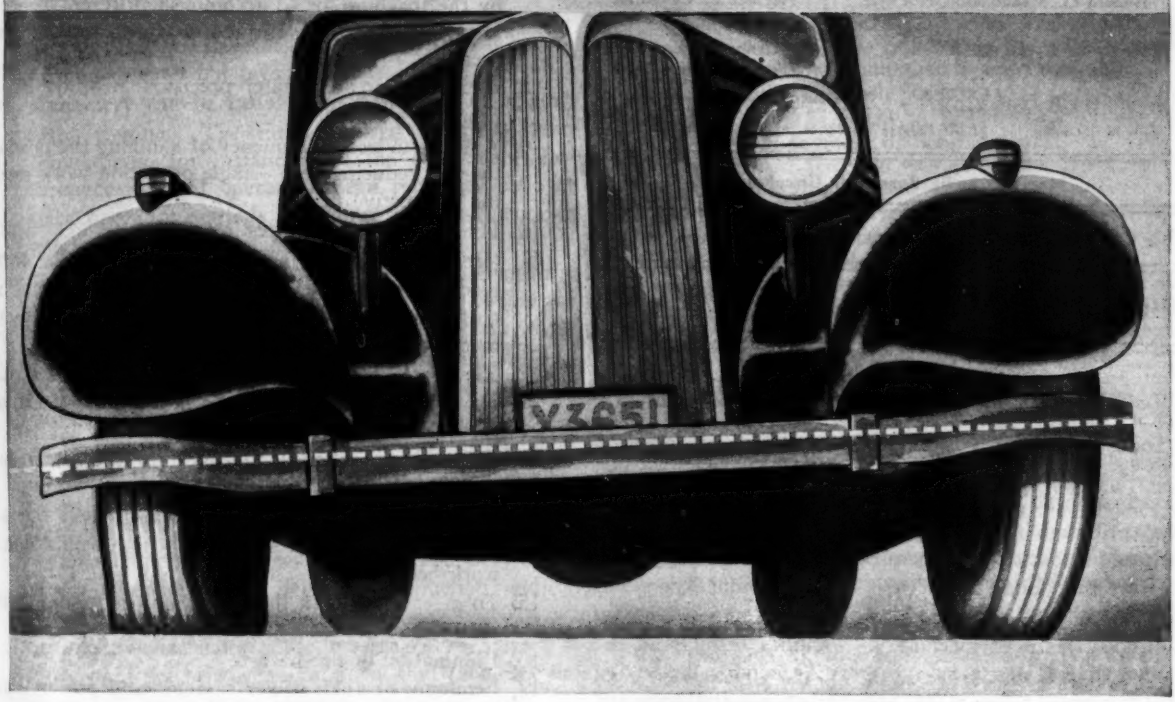
Cleveland, Ohio—Martin Rosenberger Wallpaper Company, Columbus, Ohio, has leased property in the Frederick Building, 2053 East Fourth street, Cleveland, and will occupy at early date for new local storage and distributing branch. Company is said to be planning establishment of a large warehouse unit in Cleveland district for storage and distributing service throughout this section.

Bridgetown, N. S.—The Annapolis Basin Pulp and Power Company, Bridgetown, L. K. Crowell, general manager, has plans under way for construction of a new sulphite pulp mill in the vicinity of Paradise Lake, comprising group of buildings, to be equipped for large capacity. A hydroelectric power development is proposed at Paradise Lake, to be used for power service at the mill. Entire project is reported to cost over $250,000, with equipment.

Corstorphine, Scotland—The Corstorphine Corrugated Box Company, Corstorphine, near Edinburgh, has work under way on new local plant for the manufacture of corrugated fiber boxes and containers. A site of about 10 acres of land has been taken over for the entire plant. It is proposed to have the first unit ready for service in the spring. Complete project will cost close to $300,000, including machinery.

Leaking air . . .

UNEVEN WEIGHT



Here's a situation to be as carefully guarded against in a paper mill as in an automobile

UNEVEN tire inflation does a lot of damage in a short time. It causes uneven distribution of the car's weight. The results: extra wear on tires; greater strain on parts of the chassis; difficulty in driving. Car and truck owners avoid the danger and cost of *uneven weight.*

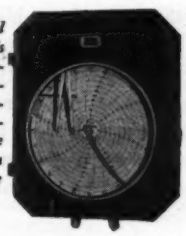
In your paper mill—uneven weight distribution may be robbing paper quality and adding to production costs. It happens at press rolls, where incorrect weight adjustment and variations in pressures affect stock uniformity, and damage felts and presses. Only the maintenance of correct press roll pressures at both ends of the press eliminates trouble and keeps costs down.

There is a sure way to do this. Use the Taylor Pressroll Load Recorder. This accurate, durable instrument gives you an hour-by-hour chart record of pressures. It has proved its value in long mill service, showing savings that usually pay for its cost in a few months' time.

The Taylor Pressroll Recorder has shown that it can—

1. **Reduce felt costs per ton** from 5 to 10% by doing away with uneven frictional wear.
2. **Cut steam costs per ton** by removing water at the presses instead of at the dryers.
3. **Maintain uniform paper quality** by eliminating over-dried and under-dried edges and a cockled or grainy sheet.
4. **Produce paper exactly** according to specification for finish, bulk, density, opacity, and other characteristics.

Let us show you how Taylor Pressroll Load Recorders will fit into your mills. For specific information on your own problem, address Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada. Manufacturers in England—Short & Mason, Ltd.



The record of pressroll pressures is written by this Taylor Pressroll Load Recorder — a durable, economical and highly efficient instrument. Variation between weights at the ends of the press show in the difference between the two pen readings.

Taylor

Indicating Recording • Controlling

TEMPERATURE, PRESSURE *and* **FLOW INSTRUMENTS**

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Herbert J. Laughton
Associate Editor

Thomas J. Burke, C. A.
Editor Cost Section

Lynne M. Lamm
Washington Correspondent

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POTENTIAL MACHINERY REQUIREMENTS

Today opportunity beckons the machinery industry. This is the conclusion arrived at after months of factual investigation by the Machinery and Allied Products Institute of Chicago in which its fifty-eight representative member trade associations cooperated. The survey emphasizes the fact that today America is not overbuilt; Americans have not all they want and need. Our people need goods; our industries need machinery. Families throughout the country during the past 5 years of economic depression have foregone those many and varied requirements and comforts which have become associated, one and all, as an inseparable part of our world-envied American standard of living. Manufacturers meanwhile, under the lash of competition and the restriction of production which has come about either through economic factors or through planned restriction under codes, have deferred the purchase of capital goods. As a consequence, there has been accumulated during those years a very real volume of deferred purchases. It is tangible, and it is tremendous—in the case of machinery the largest ever recorded.

Fundamentally, machinery is purchased to maintain and increase productivity—replacement, and additional equipment. But there are detailed reasons brought out by the survey which give an interesting insight into the varied considerations. Some of the underlying reasons why Industry buys machinery totaling twenty-five are listed as follows:

1. Obsolescence. The machine is not worn out, but invention has created a more efficient machine that does the work better.
2. Machinery is worn out or broken and is beyond economic rehabilitation.
3. The machinery is still serviceable but requires uneconomical maintenance expense, resulting, too, in delays due to breakdowns and adjustments.
4. A desire to reduce the cost of production to create a wider market through a lower selling price for the product.
5. A desire to reduce the necessity, and cost, of unwarranted supervision.
6. The necessity for increasing the volume of production to meet demand.
7. The desirability of reducing the floor space occupied by the machine, or to accomplish different processing or method of manufacture within limited plant area.
8. A need to create greater precision in or quality of product.
9. A desire to lessen frequency of handling the product, thereby reducing cost—single operation work avoiding exhaustive tasks.
10. For experiments and testing.
11. Greater flexibility: installing a new machine to replace several different types of old machines required to do the same work—and, besides, the new machine does the job better.
12. Savings to be realized from changing from a cumbersome catch-all machine to one highly specialized for quantity production.
13. To replace machinery too light for the heavy duty required of it.
14. To replace machinery too heavy and costly to operate when an efficient smaller machine would do the work better.
15. To meet changes in the design or processing of the product.
16. Elimination of fire hazard.
17. Economy of fuel, power savings, and power transmission.
18. To change type of power transmission from shaft to direct motor drive or direct operation.
19. A change from manual to machine operation.
20. To create greater efficiency in lubrication.
21. To decrease noise of operation.
22. To create greater safety against accidents to operator, especially careless operators.
23. To enhance cleanliness and order.
24. To eliminate the "slow horse in the team" and develop a pace of production commensurate with other operations.
25. To maintain loyalty and conscientious attitude of workers, since poor equipment is an incentive to careless conduct and inefficiency, regardless of how competent the human material constituting the plant may be.

Machinery for numerous reasons should be bought now. Among these reasons are:

1. Prices are now at their lowest; machinery cannot be sold for less than it sells for at the present time. Increased demand in any line of industry inevitably is accompanied by rising prices; to this inflexible

working of the law of supply and demand the machinery industry is no exception.

2. Funds. Fortunately some firms have liquid funds drawing at best a low rate of interest, or none at all; these funds could be better invested in your own plants. Some of these funds may be made up of your depreciation reserves. Furthermore, credit is becoming easier.
3. Skilled mechanics to build and install machinery are more plentiful now than they will be later. Surprising as it may seem, skilled labor is drifting away during these depression years to other occupations, only to find they have lost much of their skill on returning to their old jobs.
4. Machinery can be installed now without disturbing plant routine. The time required to install new foundations, for instance, and the consequent disturbance to plant operation mean relatively little in slack operating periods, but constitute a tremendous handicap in a time of flush demand.
5. Keep men on the pay roll busy. Many manufacturers have retained on their pay rolls competent men for whom they really have had insufficient work. These men can invest full time in removing old machinery and aid in the installation of new.
6. No delay in delivery. Machinery usually is of special order and design and not available from stock; generally it is manufactured to order upon plans and specifications. During quiet times orders are given immediate attention and delivery is prompt. To expect prompt delivery when plants are busy is to court disappointment, delay in production and, in many cases, loss of business.
7. Productive efficiency. We must face the fact that taxes will not be lower—not soon—but that they are bound to be higher; because production costs are climbing upward daily, codes, old-age pensions, unemployment insurance, maternity welfare and other items which mark the progress of time will have their effect on rising costs.
8. Preparedness. Most urgent, will be the necessity of decreasing costs. Plants not efficiently equipped cannot expect to secure business from competitors who, because they have modern machinery, are able to get the most out of each invested machinery dollar. Those operating under old processes with worn-out or obsolete machinery cannot fail to be undersold continuously. Also, we should be becoming conscious of the need for foreign trade; to get our share we must decrease production costs to balance the lower labor standards and wages in European countries.

The survey is filled with convincing proof that there exists a huge flood of dammed-up orders for machinery and capital goods. It should have wide import and significance, in its inevitable effect on governmental policies, in the implications of the detailed figures, and in the relevation of the opportunity which today beckons the machinery industries.

American Writing Paper Reports Loss

HOLYOKE, Mass., April 8, 1935—The American Writing Paper Company, Inc., reported last week a loss of $504,209 for 1934 as compared to a loss of $235,984 in 1933. The gross operating profit in that period declined from $878,135 to $647,800, due, President Sidney L. Willson states, to the fact that selling prices could not be adjusted because of existing competitive conditions, to absorb the increase in labor costs and the advances in raw materials and supplies.

A substantial portion of the loss was due to idle mill charges which amounted to $135,406. During the year the company spent $174,417 for maintenance.

President Willson reported to the stockholders that the board of directors is now engaged in formulating a plan of reorganization for submission to the court.

During the year, the cash position of the company was strengthened from $125,598 to $247,039. This was due partly to the non-payment of bond interest.

The loss on bad accounts was about one-fourth of one per cent. During the current year there has been considerable development work. New lines have been established, and slow moving lines have been discontinued, the president told the stockholders.

Gross sales for the year were $5,022,884.80. In the item manufacturing cost of sales, it was revealed that $622,871.57 was spent on labor and $2,045,605.18 on materials and $1,366,134.69 on supplies and expenses.

I. C. C. Increases Paper Freight Rates

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 8, 1935—The Interstate Commerce Commission in handing down its 1935 freight rate increase decision has increased the rates on newsprint and printing paper 3 cents per 100 pounds. A similar increase was also allowed on paper bags and wrapping paper, paper board, pulpboard, and wall board and building paper and prepared roofing materials. An increase of 1 cent per 100 pounds was also allowed on wood pulp.

The railroads, in this case, asked the Commission for increases which would allow them $170,000,000 to meet increased expenses amounting to what they contended would cost $293,000,000. Of this amount $156,000,000 was for increased wages which became effective April 1 and $137,000,000 they said would be needed for the increased cost of supplies. It is estimated that the increases actually allowed by the Commission would amount to about $85,000,000.

Centrifugal Engineering Corp. Wins Decree

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, April 8, 1935—An interlocutory decree finding the patent in suit to be valid and infringed, injoining the defendant from further infringement, and awarding the complainant an accounting of profits and damages, was entered last week by District Judge Robert R. Nevin in the patent infringement suit of the Centrifugal Engineering and Patents Corporation, Jersey City, New Jersey, against the Black-Clawson Company, Hamilton, Ohio.

In this action the complainant charged the defendant was infringing the Hermanus Thomasson Patent No. 1,536,988 covering a machine for refining paper pulp.

Following the entry of the decree, the Black-Clawson Company filed its petition for allowance of an appeal to United States Circuit Court of Appeals. Upon presentation of the petition to Judge Nevin, he entered an order allowing the appeal and fixing the appeal bond at $25,000.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

First Quarter, 1935

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since only one claim, in general, is published in the Official Gazette, it is not claimed that this list is complete.

Copies of any of these patents may be obtained from the Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. At least the number of the patent and the patentee should be given. Personal checks and stamps are not accepted in payment for patents.

JANUARY 1, 1935

1,985,975. Paper folding machine. George Carruthers and Clarence Edgar Ruddell, assignors to Interlake Tissue Mills Co., Ltd., Toronto, Canada. Filed June 15, 1933. 13 claims. (Cl. 270-61).

1,985,994. Porous material and process of making the same. Harry E. Holcomb, assignor to Johns-Manville Corporation, New York, N. Y. Filed Jan. 13, 1932. 18 claims. (Cl. 18-47.5).

1,986,023. Delivery mechanism for paper box machines. Edwin G. Staude, Minneapolis, Minn. Filed Aug. 24, 1929. 28 claims. (Cl. 271-76).

1,986,039. Adhesive-applying mechanism. Raymond E. Ackley, assignor to R. R. Donnelley and Sons Company, Chicago, Ill. Filed Aug. 18, 1932. 14 claims. (Cl. 91-50).

1,986,043. Method of and machine for closing flexible containers. Gilbert Carter, assignor to Royal Baking Powder Company, New York, N. Y. Filed Sept. 4, 1931. 30 claims. (Cl. 93-6).

1,986,062. Coating machine. Robert J. Hutt and George A. Hutt, Brooklyn, N. Y. Filed Sept. 26, 1933. 4 claims. (Cl. 91-18).

1,986,070. Creping of paper in the longitudinal direction. Herman Rosenfeld, Mannheim, Germany. Filed Dec. 16, 1932. 6 claims. (Cl. 154-33).

1,986,139. Knife mechanism for shingle strip apparatus. Donald A. Cumfer, assignor to Asphalt Process Corporation, New York, N. Y. Filed July 25, 1932. 10 claims. (Cl. 164-28).

1,986,278. Protective paper for photographic material. Alfred Miller, assignor to Agfa Ansco Corporation, Binghamton, N. Y. Filed Oct 12, 1931. 2 claims. (Cl. 95-9). A pyramidal graining is applied to certain areas of the paper surface.

1,986,291. Manufacture of absorbent water-laid webs of felted fiber. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Nov. 23, 1933. 10 claims. (Cl. 92-21) A fibrous felt of a compactness of about 20 to 55, said compactness being determined by dividing the basis weight of the felt in pounds by its thickness in inches and multiplying by the factor 10^{-3}.

1,986,341. Composition of matter and process of preparing same. Roger B. Hill, assignor to Brown Company, Berlin, N. H. Filed May 17, 1932. 12 claims. (Cl. 106-1). Cellulose pulp is mechanically reduced to a mass of substantially unhydrated particles from 40 to 200 mesh and intimately mixed with a waxy material in finely divided but undissolved and unfused state.

1,986,345. Stuffing for chairs and method of treating same. Jacob Kronheim, Cleveland, Ohio. Filed Oct. 16, 1933. 1 claim. (Cl. 92-13). Agave plants are shredded, soaked in caustic soda, washed, dried, and sprayed with a sulphonated oil.

1,986,367. Manufacture of artificial leather. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed June 3, 1931. 7 claims. (Cl. 91-68). A dried, bibulous web of unwoven cellulose fiber impregnated with a water-dispersed rubber of the character of latex and viscose.

1,986,490 Paper drier felt. Ezekiel J. Wilson, assignor to F. C. Huyck and Sons, Rensselaer, N. Y. Filed Sept. 22, 1932. 6 claims. (Cl. 24-33). A joint for drier felts.

1,986,660. Bed plate. Albert J. Allison, assignor to Simonds Worden White Company, Dayton, Ohio. Filed Feb. 24, 1932. 4 claims. (Cl. 92-22). A plurality of hardened steel bars set on edge and assembled with spaces between them.

1,986,680. Winding machine. Nicholas Marcalus, Elizabeth, N. J. Filed Sept. 4, 1931. 15 claims. (Cl. 242-56).

1,986,726. Means for arresting dust and fluff from machines or appliances for cutting paper and other fibrous materials. Thomas Hamilton Grozier, Greenwich Point, Sydney, New South Wales, Australia. Filed Feb 7, 1933. 10 claims. (Cl. 164-60).

1,986,760. Process of producing cellulose from wood and other cellulose containing material and apparatus therefor. Otto Kreissler, assignor to American Lurgi Corporation, New York, N. Y. Filed Feb. 17, 1934. 11 claims. (Cl. 92-7). Method of filling digester, in which part of liquor is removed from bottom to withdraw air and gas between the pieces of fibrous material.

JANUARY 8, 1935

R19,421. Ornamented felt and felt material. Ferdinand R. Stirn, assignor to F. and A Stirn Corporation, New York, N. Y. Original No. 1,941,281, dated December 26, 1933. Application for reissue Sept. 20, 1934. 8 claims. (Cl. 41-24).

1,986,785. Joint for drier felt of paper machines. Michael J. Argy, assignor to Argy Pre-Heating Corporation, Niagara Falls, N. Y. Filed Sept 11, 1930. 6 claims. (Cl. 24-205).

1,986,815. Refined "sulphate black liquor" tall oil and process of making the same. Torsten Hasselstrom, New York, N. Y. Filed Dec. 3, 1931. 13 claims. (Cl. 252-7). A tall oil containing substantial amounts of resin acids but free of solid constituents and ligneous matters of the black liquor.

1,986,816. Flotation process. Torsten Hasselstrom, New York, N. Y. Filed Dec. 3, 1931. 17 claims (Cl. 209-166). The use of tall oil from black liquors as a flotation agent.

1,986,817. Flotation reagent. Torsten Hasselstrom, New York, N. Y. Filed Dec. 21, 1932. 8 claims. (Cl. 252-9).

1,986,907. Production of nodules. Sidney D. Wells, Port Edwards, Wis. Filed Jan. 18, 1932. 9 claims (Cl. 92-20). The stock is beaten with rods in a rotating drum at a consistency of at least 15 percent and not more than 33 percent. Also a deinking process, using bentonite and soda ash.

1,986,954. Laminated sheet material. Allen Abrams, Paul L. Anthony, George J. Brabender and Winfred H. Graebner, assignors to Marathon Paper Mills Company, Rothschild, Wis. Filed April 6, 1933. 11 claims. (Cl. 154-40). A solution containing a moisture-proofing agent is applied to one side of a greaseproof sheet, the sheet dried, an adhesive applied to the uncoated side of said sheet and uniting a layer of fiberboard to said surface.

1,986,961. Method of making laminated paper. Lloyd L. Dodge, assignor to Rhinelander Paper Company, Rhinelander, Wis Filed Dec. 6, 1933. 8 claims. (Cl. 154-40). A laminated glassine paper from plies of uncalendered greaseproof paper.

1,986,977. Paper machinery. Herman L. Kutter, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed Jan. 25, 1932. 2 claims. (Cl. 34-48). A series of vertical drier unit frames.

1,987,183. Apparatus for roll coating. Charles A Dickhaut, assignor to John Waldron Corporation, New Brunswick, N. J. Filed June 25, 1932. 10 claims. (Cl. 91-55).

1,987,195. Process for the digestion of vegetable growths to produce cellulose. Herman B. Kipper, Accord, Mass. Filed March 3, 1934. 6 claims. (Cl. 92-9). Cylindrically rapidly moving metal pieces travel through the digestion mass during the cooking process.

1,987,211. Method of towel folding and wrapping Joseph P. Remington, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed Jan. 21, 1931. 8 claims. (Cl. 93-2). Method of folding and wrapping for a sealed package.

1,987,212. Bleaching of cellulose fiber. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed July 12, 1928. 8 claims. (Cl. 8-2). Hypochlorite followed by permanganate

1,987,213. Manufacture of water-laid felts. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Dec. 10, 1932. 12 claims. (Cl. 92-3). Method of working rags.

1,987,214. Cyclic process of pulping raw cellulosic material. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed July 18, 1933. 5 claims. (Cl. 92-13).

1,987,224. Method of removing scrap and folding and gluing carton blanks and machine therefor. Samuel Bergstein, Cincinnati, Ohio. Filed Oct. 17, 1932. 15 claims. (Cl. 93-58).

1,987,225. Laminated paper board and container made therefrom. Samuel Bergstein, Cincinnati, Ohio. Filed Dec. 10, 1932. 11 claims. (Cl. 154-46).

1,987,250. Suspension drying apparatus. Emil Wenzel, assignor to Ernst Gessner Aktiengesellschaft, Aue, Germany. Filed March 14, 1933. 3 claims. (Cl. 34-12).

1,987,327. Papef handling machine. Joseph Conn Dawson and John Charles Williams, assignors to The Cleveland Folding Machine Company, Mentor Township, Ohio. Filed April 4, 1930. 45 claims. (Cl. 271-49). A conveyor belt for a paper handling machine.

1,987,352. Paper handling machine. Lesley R. Tufts, assignor to The Cleveland Folding Machine Company, Mentor Township, Ohio. Filed Jan. 23, 1930. 28 claims. (Cl. 271-49). Feed table.

1,987,362. Cup making machine. Henry B. Cooley, assignor to The American Paper Goods Company, Montclair, N. J. Filed March 6, 1933. 22 claims. (Cl. 93-39).

JANUARY 15, 1935

1,987,694. Method of producing laminated material. Gerald H. Mains, assignor to Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa. Filed Dec. 27, 1930. 2 claims. (Cl. 91-70). Base sheets are impregnated with phenol-aldehyde resin, partially dried, washed with aqueous alkali and then heated at 60-120° C. to remove odorous substances.

1,987,829. Method of and means for coating articles. Arthur S. Johnson, assignor to United Shoe Machinery Corporation, Paterson, N. J. Filed Dec. 18, 1931. 43 claims (Cl. 91-39).

1,987,901. Paper and method of making. Ralph A. Hayward, assignor to Kalamazoo Vegetable Parchment Company, Parchment, Mich. Filed Sept. 6, 1932. 13 claims. (Cl. 92-40). A colloidal suspension of filler is applied to both sides of a

dried web and the web passed between non-yielding pressure rolls.

1,987,930. Paper making. Charles I. Goessmann, by Anna M. D Goessmann, executrix, Brooklyn, N. Y. Filed June 20, 1933. 6 claims. (Cl. 154-50). A dense, hornlike and homogeneous mass of solidified colloid rendered insoluble and having embedded therein laminae of raw stock paper completely saturated with the colloid prior to hardening.

1,988,126. Waterproof sheet and process of making same. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed April 23, 1934. 15 claims. (Cl. 134-17). An emulsion of rubber and bitumen with a colloid is used.

1,988,161. Method of drying sized molded pulp articles. Merle P. Chaplin, assignor to Keyes Fibre Company, Inc., Waterville, Maine. Filed Oct. 19, 1932. 1 claim. (Cl. 92-55).

1,988,179. Opaque paper. Albert G. Natwick, Henry E. Ostenson and William R. Barber, assignors to Crown Willamette Paper Company, San Francisco, Calif. Filed July 21, 1933. 11 claims. (Cl. 92-40). Means for coating the sheet.

1,988,231. Copperized pear wrap paper. William R. Barber, Albert G. Natwick and Maurice W. Phelps, assignors to Crown Willamette Paper Company, San Francisco, Calif. Filed Nov. 9, 1932. 19 claims. (Cl. 92-21). A paper sheet made of lignin-bearing pulp carrying approximately 1.4% metallic copper in the form of a complex lignin chloride copper compound.

1,988,247. Paper making. Herman L. Kutter, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed May 29, 1932. 18 claims. (Cl. 92-44). A wet end construction for a Fourdrinier machine.

1,988,340. Process and apparatus for making laminated vulcanized fiber. William M. Shoemaker, Jr., assignor to National Vulcanized Fibre Company, Wilmington, Del. Filed Feb. 15, 1930 15 claims. (Cl. 154-34).

1,988,363. Process of recovering fiber from waste paper. Francis H. Snyder, assignor to Snyder Maclaren Processes, Inc., New York, N. Y. Filed Oct. 31, 1933. 16 claims. (Cl. 92-9). The deinking reagent consists of fatty alcohols having more than 8 carbon atoms or derivatives of the same.

1,988,402. Reticulate drum or cylinder of paper making and like machines. Reginald James Thomas, assignor to Charles Walmsley and Company Limited, Bury, England and St. Anne's Board Mill Company Limited, Bristol, England. Filed June 19, 1933. 1 claim. (Cl. 92-43).

1,988,416. Method of purifying pulp. Horace Freeman and John Walter Hunter, assignors to Consolidated Paper Corporation, Limited, Montreal, Quebec, Canada. Filed Sept. 20, 1933. 5 claims. (Cl. 92-20). Ground wood pulp is purified by passing numerous finely divided streams of air upwardly through a mass of the pulp in suspenion in the water circulating through the grinder and separating the froth.

January 22, 1935

1,988,441. Manufacture of vulcanized fiber. John K. Anthony, assignor to Horace B. Fay, Cleveland, Ohio. Filed March 24, 1931. 3 claims. (Cl. 154-50).

1,988,451. Blank Making. Cutler D. Knowlton assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Sept. 8, 1930. 101 claims. (Cl 93-36).

1,988,452. Box-making. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed July 7, 1930. 167 claims. (Cl. 93-51).

1,988,462. Manufacture of bags. Thomas M. Royal, Philadelphia, Pa. Filed March 10, 1932. 7 claims. (Cl. 93-35).

1,988,476. Luminous material. Jacques Edwin Brandenberger, assignor to DuPont Cellophane Company, Inc., New York, N. Y. Filed Sept. 29, 1931. 1 claim. (Cl. 154-46). Two sheets of flexible transparent cellulose material joined by an adhesive containing a lumineacent material.

1,988,556. Gloss measuring device. Richard Sewall Hunter, assignor to Henry A Gardner, Washington, D. C. Filed Feb. 28, 1934. 5 claims. (Cl. 88-14).

1,988,640. Method of producing rubber covered suction rolls. Hubert G. Welsford, assignor to Dominion Engineering Works Limited, Lachine, Quebec, Canada. Filed March 6, 1933. 3 claims. (Cl. 18-59).

1,988,820. Beater Hamilton D. Wagnon, Portland, Oregon. Filed June 26, 1934. 5 claims. (Cl. 92-24).

1,989,036. Paper coating. Donald B. Bradner, assignor to The Champion Coated Paper Company, Hamilton, Ohio. Filed July 18, 1932. 2 claims. (Cl. 91-31). Rolls for coating.

1,989,037. Thickness gauge. Roy W. Brown, assignor to The Firestone Tire and Rubber Company, Akron, Ohio. Filed April 5, 1926. 13 claims. (Cl. 177-351).

1,989,038. Apparatus for gauging and controlling the thickness of material. Roy W. Brown, assignor to The Firestone Tire and Rubber Company, Akron, Ohio. Filed Sept. 24, 1932. 17 claims. (Cl. 18-2).

1,989,048. Method of and apparatus for reducing the bulk of stacks of paper sheets and softening said sheets. Courtney P. Winter and Dunbar A. Rosenthal, assignors to United States Paper Mills, Inc., Chambersburg, Pa. Filed May 25, 1934. 9 claims. (Cl. 92-70). Sheets of creped paper are subjected to pressure.

January 29, 1935

1,989,111. Process for making bags and the like. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Sept. 30, 1932. 3 claims. (Cl. 93-35).

1,989,435. Method and device in the manufacture of paper. Ivar Wallquist, Gottenborg, Sweden. Filed March 19, 1934. 2 claims. (Cl. 92-38). Method of arranging the fibers in a sheet on the wire.

1,989,554. Roofing element. Lester Kirschbraun and Otto A. Heppes, assignors to The Patent and Licensing Corporation, Boston, Mass. Filed May 20, 1931. 3 claims. (Cl. 108-7).

1,989,571. Method of and apparatus for bleaching and refining pulp. Carl Busch Thorne, Hawkesbury, Ontario, Canada. Filed May 6, 1932. 5 claims. (Cl. 8-2). Continuous 2-stage method of bleaching low density pulp.

1,989,625. Apparatus for determining tearing strength. Lorrel B. Nichols, assignor of one-half to Hollingsworth and Vose Company, Boston, Mass. Filed Feb. 7, 1931. 11 claims. (Cl. 265-17).

February 5, 1935

1,989,681. Moistureproof material and process of making same. William Hale Charch, assignor to DuPont Cellophane Company, Inc., New York, N. Y. Filed Feb. 21, 1929. (Cl. 91-70).

1,989,709. Paper and method of making same. Carlton J. O'Neil, assignor to Johns-Manville Corporation, New York, N. Y. Filed April 27, 1932. 13 claims. (Cl. 92-21). The paper contains finely divided diatomaceous earth.

1,989,875. Method of making sealing and reinforcing tapes and similar products. William W. McLaurin; Old Colony Trust Company, Boston, Mass., executor. Filed July 10, 1931. 7 claims. (Cl. 91-70).

1,989,885. Specialty paper. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Jan. 20, 1932. 2 claims. (Cl. 91-68). A composite sheet comprising a porous, readily permeable and absorptive paper base containing a wet-strengthening agent and a fluffy layer of cellulose fiber attached to at least one surface of said paper base.

1,989.943. Apparatus for use in connection with the making of bags. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed April 22, 1932. 13 claims. (Cl. 164-68).

1,990,080. Moistureproof material. Lloyd L. Leach and John C. Siemann, assignors to DuPont Cellophane Company, Inc., New York, N. Y. Filed Feb. 12, 1932. 24 claims. (Cl. 91-68).

1,990,098. Laminated product and method of making the same. George W. Seymour, assignor to Celanese Corporation of America, a Corporation of Delaware. Filed Nov. 29, 1932. 21 claims. (Cl. 154-40).

1,990,102. Roll for paper machines. Wiley C. Smith, Beloit, Wis. Filed April 2, 1934. 8 claims. (Cl. 92-53).

1,990,248. Waterproof fibrous tubing and method of making the same. Howard Parker, assignor to Brown Company, Berlin, N. H. Filed April 25, 1930. 17 claims. (Cl. 93-94).

1,990,288. Paper pulp screening machine. Nelson M. Knight, Brookline, Mass. Filed Sept. 17, 1932. 11 claims. (Cl. 92-34).

1,990,292. Process for fireproofing cellulosic materials. Martin Leatherman, Hyattsville, Md.; dedicated to the free use of the public. Filed Jan. 16, 1933. 7 claims. (Cl. 91-68). Use of sodium stannate and a strong mineral acid.

1,990,319. Device for piling and counting blanks of paper or the like. Karl Fillmann, assignor to the firm Fr. Hesser, Maschinenfabrik-Aktiengesellschaft, Cannstatt, Germany. Filed April 21, 1934. 7 claims. (Cl. 93-93).

1,990,376. Process of deinking paper. Henry B. Hass, assignor to Purdue Research Foundation, West Lafayette, Ind. Filed Aug. 6, 1934. 14 claims. (Cl. 92-9). Use of soap and one or more chlorinated hydrocarbons.

1,990,392. Automatic clamp for paper cutting machines. John F. Schroeter, Atlanta, and John A. Hanson, College Park, Ga. Filed Jan. 28, 1933. 11 claims. (Cl. 164-51).

1,990,457. Rosin size and method of manufacturing the same. George James Manson, assignor to Manson Chemical Company, a Corporation of New Jersey. Filed May 10, 1924. 2 claims. (Cl. 134-21). Rosin is dispersed in the presence of clay in a slightly alkaline aqueous medium.

February 12, 1935

1,990,481. Tube making machine. Karl E. Garling, assignor to Soda Straw Manufacturing Corporation, Newark, N. J. Filed Jan. 28, 1929. 4 claims. (Cl. 93-80).

1,990,501. Paper stock controlling method and apparatus. Ernest Poirier, Waterville, Maine. Filed Feb. 2, 1934. 19 claims. (Cl. 92-46). Method of maintaining level of stock with changes in consistency.

1,990,535. Stencil sheet and method of making same. Harmon P. Elliott, assignor to The Elliott Addressing Machine Company, Watertown, Mass. Filed Oct. 27, 1933. 22 claims. (Cl. 41-38.6). Method of saturating a yoshino base.

1,990,584. Coating machine. Norman Louis Dolbey, Leeds, England. Filed Nov. 30, 1931. 16 claims. (Cl. 91-45).

1,990,585. Coating process. Norman Louis Dolbey, Leeds, England. Filed Feb. 13, 1933. 16 claims. (Cl. 91-68).

1,990,637. Method of making containers. Adrian O. Daller, assignor to Daller Carton Co., Inc., New York, N. Y. Filed June 2, 1933. 13 claims. (Cl. 93-36). Method of attaching coated surfaces, at least one which is wax-coated.

1,990,701. Wall paper. Albert C. Knight, Clinton Corners, N. Y. Filed June 26, 1931. 2 claims. (Cl. 154-43).

1,990,749. Apparatus for coating, impregnating, laminating and the like. Ross S. Phillips and Ray G. Carlin, assignors to The Cleveland Liner and Manufacturing Company, Cleveland, Ohio. Filed Feb. 1, 1932. 22 claims. (Cl. 91-53).

1,990,892. Process and machine for the manufacture of containers from transparent cellulose sheets. Logan A. Becker and John M. Munson, assignors to The Dobeckmun Company, Lakewood, Ohio. Filed Nov. 13, 1928. 24 claims. (Cl. 93-18). Bag machine.

1,990,942. Process of bleaching pulp. Clark T. Henderson, Burlingame, Calif. Filed Sept. 26, 1933. 8 claims. (Cl. 8-2). Wood pulp is treated with the effluent liquor from passing chlorine and water into contact with limestone, washed and then bleached with a hypochlorite.

1,990,944. Envelope machine. Martin Joachimczyk, Berlin-Charlottenburg, Germany. Filed Aug. 15, 1932. 15 claims. (Cl. 93-63).

1,990,992. Method and means of mechanically separating slimy substance from fiber stock. Richard T. Lang and Wilhelm Thaler, assignors to American Voith Contact Co., Inc., New York, N. Y. Filed April 26, 1934. 16 claims. (Cl. 92-34). Centrifugal force used.

1,990,994. Paper manufacture. Edward K. Lum, assignor to The Beckett Paper Company, Hamilton, Ohio. Filed Feb. 16, 1933. 1 claim. (Cl. 92-48). A mark of origin is printed on the partially dried paper web with a solution of manganese chloride and the drying then completed.

1,991,090. Laminated material. William E. Gwaltney, assignor to Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa. Filed June 16, 1930. 5 claims. (Cl. 154-2).

1,991,093. Means for measuring moisture content of fibrous materials. Earl J. Haverstick, assignor to Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa. Filed May 31, 1930. 4 claims. (Cl. 73-51).

1,991,211. Method of and apparatus for circulating liquors and vapors in digesters. Clark C. Heritage, Rumford, Maine, and Vance P. Edwardes, New York, N. Y. Filed Aug. 19, 1933. 14 claims. (Cl. 92-7).

1,991,243. Apparatus for producing cellulose. Joaquin Julio de la Roza, Sr., assignor to de la Roza Corporation, Wilmington, Del. Filed Dec. 17, 1931. 28 claims. (Cl. 92-7). A long, horizontal digester.

1,991,244. Method and apparatus for digesting cellulose bearing materials. Joaquin Julio de la Roza, Sr., assignor to de la Roza Corporation, Wilmington, Del. Filed Sept. 21, 1933. 24 claims. (Cl. 92-7).

1,991,245. Process for producing cellulose. Joaquin Julio de la Roza, Sr., assignor to de la Roza Corporation, Wilmington, Del. Filed Jan. 4, 1934. 9 claims. (Cl. 92-7). Material is treated with a chemical in a digestion stage at a volumetric density in excess of 12 pounds per cubic foot (dry basis).

1,991,346. Press section for fourdrinier paper machine. Charles L. Ellis, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed April 18, 1934. 12 claims. (Cl. 92-49).

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R19,470. Paper pulp bleaching process. Wilhelm Hirschkind, assignor to Great Western Electro-Chemical Co., San Francisco, Calif. Original No. 1,873,924, dated April 23, 1932. Application for reissue filed Oct. 22, 1934. 5 claims. (Cl 8-2).

1,991,365. Pulp digesting method and system. Frederick W. Adams, Stoneham, Mass., and George S. Witham, Jr., Lincoln, N. H. Filed June 20, 1933. 9 claims. (Cl. 92-7). Method of liquor circulation.

1,991,366. Asbestos faced drier belt. William A. Barrell, North Andover, Mass. Filed Feb. 13, 1933. 11 claims. (Cl. 139-410). Felt for paper machines.

1,991,373. Tile and method of manufacture. Charles E. Bradley, Boston, Mass. Filed Aug. 4, 1931. 12 claims. (Cl. 154-2). Imitation tile from pulp.

1,991,413. Process of treating fibrous material. Elis Olsson, West Point, Va. Filed May 2, 1933. 4 claims. (Cl. 92-7). Method of chemically di-

gesting fibrous material and reclaiming and concentrating the treating liquor.

1,991,431. Paper cutting machine. Ralph S. Tyler, assignor to The Chandler and Price Company, Cleveland, Ohio. Filed Jan. 15, 1932. 3 claims. (Cl. 164-59).

1,991,432. Drier mechanism for paper making machines. Charles W. Valentine and Alfred Helin, assignors to The Bagley and Sewall Company, Watertown, N. Y. Filed June 2, 1932. 7 claims. (Cl. 285-10).

1,991,437. Method of making boxes. Fred Windfuhr, assignor to Joseph Dixon Crucible Company, Jersey City, N. J. Filed July 21, 1934. 6 claims. (Cl. 93-36).

1,991,499. Method of making paper. Pierre Drewsen, assignor to Hinde and Dauch Paper Company, Sandusky, Ohio. Filed Jan. 8, 1932. 2 claims. (Cl. 92-6). Stock is defibered in alkali solution with a stock density between 10 and 50%.

1,991,527. Crinkled coated surface. Karel Toll, assignor to Chadeloid Chemical Company, New York, N. Y. Filed Nov. 17, 1931. 1 claim. (Cl. 91-70).

1,991,528. Crinkled surface coating. Karel Toll, assignor to Chadeloid Chemical Company, New York, N. Y. Filed Nov. 17, 1931. 1 claim. (Cl. 134-26). China wood oil in different degrees of polymerization.

1,991,599. Paper inspection process and apparatus. Myrl N. Davis, assignor to Paper Patents Company, Neenah, Wis. Filed Dec. 1, 1933. 11 claims. (Cl. 88-14). Use of photoelectric cell to determine the variations in the formation of a paper sheet.

1,991,769. Utilization of cotton plant. Gideon Howard Palmer, East Orange, N. J. Filed May 27, 1933. 10 claims. (Cl. 92-9). The plant is treated with various alkalies and then formed into sheets.

1,991,786. Manufacture of cellular substances. Hedwig Busch, assignor to Zellstofffabrik Waldhof, Mannheim, Waldhof, Germany. Filed Jan. 29, 1931. 1 claim. (Cl. 92-11). Method of digesting with 0.8% sodium hydroxide and 0.8% sodium sulphite at two atmospheres pressure.

1,991, 823. Reclaiming pulp from waste paper. Francis H. Snyder, assignor to Snyder Maclaren Processes, Inc., New York, N. Y. Filed Aug. 11, 1933. 15 claims. (Cl. 92-9). An alkali metal, sulphurous acid and soap-forming fatty acid radicles are used.

1,991,824. Production of paper pulp. Francis H. Snyder, assignor to Snyder Maclaren Processes, Inc., New York, N. Y. Filed Aug. 11, 1933. 4 claims. (Cl. 8-2). Fibrous material is treated with finely divided zinc with available sulphur dioxide in a liquid suspension and then distributing through the suspension finely divided alkaline earth metal carbonate.

1,992,145. Method of and apparatus for making containers. Eugene Conti, assignor to Herz Cup Company, Inc., New York, N. Y. Filed March 7, 1932. 34 claims. (Cl. 93-51).

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1,992,190. Method of laminating. William Hale Charch and James E. Snyder, assignors to duPont Cellophane Company, Inc., New York, N. Y. Filed Nov. 21, 1929. 15 claims. (Cl. 154-40). A method of sealing or joining moisture-proof materials.

1,992,202. Coating composition. Abraham P. Furman, assignor to Ira Furman, Charlotte, N. C. Filed Jan. 25, 1932. 25 claims. (Cl. 41-38.6). Coating for a stencil sheet.

1,992,215. Paper wadding. William R. Kellett, assignor to Paper Patents Company, Neenah, Wis. Filed Nov. 23, 1931. 4 claims. (Cl. 154-54). Stuffing wadding composed of creped woodpulp tissue paper.

1,992,249. Laminated material. James E. Snyder, assignor to duPont Cellophane Company, Inc., New York, N. Y. Filed April 28, 1931. 19 claims. (Cl. 154-46).

1,992,261. Pulp or fibrous mass breaker. William F. Traudt, Buffalo, Mass. Filed Oct. 12, 1933. 3 claims. (Cl. 259-95).

1,992,295. Method of producing SO_2. Fredrik W. de Jahn and Jacob D. Jenssen, New York, N. Y. Filed Sept. 16, 1931. 12 claims. (Cl. 23-180).

1,992,589. Organic fiber and method of preparing same. George R. Tucker and Langley W. Isom, assignors to Dewey and Almy Chemical Company, North Cambridge, Mass. Filed April 17, 1931. 4 claims. (Cl. 92-21). Method of applying rubber to fibers.

1,992,713. Paper-board machine. Lloyd T. Murphy, Chattanooga, Tenn. Filed Nov. 30, 1931. 6 claims. (Cl. 92-42).

March 5, 1935

1,992,949. Method of utilizing floating soap and derivatives thereof. Paul Hodges, assignor to Gulf States Paper Corporation, a Corporation of Delaware. Filed Jan. 9, 1933. 12 claims. (Cl. 252-1). The soap is obtained from the black liquor of the soda or sulphate process.

1,992,977. Method of removing bleachable pigments from paper containing lignocellulosic constituents. Sidney D. Wells, assignor to Lewis L. Alsted, Appleton, Wis. Filed Jan. 26, 1933. 5 claims. (Cl. 92-9). An alkaline hypochlorite is used to bleach the pigment.

1,992,996. Paper and method of making same. Lloyd L. Dodge, assignor to Rhinelander Paper Company, Rhinelander, Wis. Filed Nov. 15, 1933. 10 claims. (Cl. 91-68). Paper is treated with 2.5-10% of a plasticizer, dried, moistened and supercalendered.

1,993,097. Metal cleaning compound. Paul Hodges, assignor to Gulf States Paper Corporation, Tuscaloosa, Ala. Filed April 20, 1933. 8 claims. (Cl. 87-5). One component is the floating soap from black liquor.

1,993,098. Degreasing agent. Paul Hodges, assignor to Gulf States Paper Corporation, Tuscaloosa, Ala. Filed April 20, 1933. 5 claims. (Cl. 87-5). Black liquor soap is one component.

1,993,099. Rust inhibitor. Paul Hodges, assignor to Gulf States Paper Corporation, Tuscaloosa, Ala. Filed April 20, 1933. 6 claims. (Cl. 134-1). The cleaned article is coated with floating soap from black liquor.

1,993,148. Method of defibering lignocellulose material. Judson A. DeCew, Mount Vernon, N. Y. Filed March 29, 1932. 2 claims. (Cl. 92-20).

1,993,163. Shingle. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed May 29, 1931. 20 claims. (Cl. 108-7).

1,993,164. Building element. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed Sept. 28, 1931. 19 claims. (Cl. 108-7). Shingle.

1,993,165. Composition shingle. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed Sept. 29, 1931. 26 claims. (Cl. 108-7).

1,993,166. Method of producing building elements. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed Dec. 21, 1931. 20 claims. (Cl. 108-7).

1,993,205. Method of and apparatus for making containers. Wilber E. Bowersock and Francis J. Spiess, assignors to The Rochester Folding Box Co., Rochester, N. Y. Filed May 2, 1933. 17 claims. (Cl. 93-52).

1,993,214. Thickener for pulp stock or the like. Paul O. Haas, Beloit, Wis. Filed Nov. 21, 1932. 16 claims. (Cl. 92-34).

1,993,254. Method of preparing laminated article. George W. Booth, assignor to Crown Cork and Seal Company, Inc., Baltimore, Md. Filed April 13, 1934. 15 claims. (Cl. 154-40).

1,993,265. Manufacture of paper embodying alkaline earth metal carbonate fillers. Colver P. Dyer, assignor to Merrimac Chemical Co., Inc., Everett, Mass. Filed Feb. 28, 1933. 10 claims. (Cl. 92-21). pH value maintained at not greater than 7.2 during and subsequent to addition of filler by addition of carbon dioxide.

1,993,352. Doctor blade structure. Fred Schwartz, assignor to Fort Howard Paper Company, Green Bay, Wis. Filed July 19, 1933. 10 claims. (Cl. 92-74).

1,993,362. Method of removing ink from and bleaching printed paper. Walter S. Crisp, assignor to William J. Weir, Syracuse, N. Y. Filed July 22, 1933. 19 claims. (Cl. 92-13). Alkali, pyridine and pine oil are used.

1,993,470. Insulating material. Ross Winship, assignor to The Upson Company, Lockport, N. Y. Filed Aug. 1, 1932. 17 claims. (Cl. 154-28).

1,993,603. Hydraulic vibrator for pulp screens. William A. Haliburton, Canton, S. C. Filed June 30, 1933. 5 claims. (Cl. 92-32).

1,993,605. Apparatus by which folding cartons intended for the reception of cigarettes or the like are formed. Ernst Hermann Jähne, assignor to "Universelle" Cigarettenmaschinenfabrik J. C. Muller & Co., Dresden, Germany. Filed July 15, 1932. 37 claims. (Cl. 93-44).

March 12, 1935

1,993,750. Composition of matter and process of making the same. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Aug. 27, 1930. 25 claims. (Cl. 134-22). Carbonate filler.

1,993,772. Apparatus for coating paper and the like with lacquers. John Jerome Case, assignor to John Waldron Corporation, New Brunswick, N. J. Filed Oct. 5, 1931. 2 claims. (Cl. 91-51).

1,993,853. Paper roll package. Victor Olson, Seattle, Wash. Filed Jan. 18, 1932. 10 claims. (Cl. 206-59).

1,993,915. Mechanism for assembling cartons. Arthur Edmund Brown and William Vaughan, assignors to Leon Benoit, New York, N. Y. Filed Nov. 23, 1933. 23 claims. (Cl. 93-37).

1,993,936. Art of fourdrinier wire rolling. Malcolm J. Mackay, Kalamazoo, Mich., and John D. Watson, Appleton, Wis. Filed Jan. 24, 1934. 10 claims. (Cl. 140-3).

1,994,061. End held lining for jordan engine shells. Archer LeRoy Bolton, assignor to John W. Bolton and Sons, Inc., Lawrence, Mass. Filed May 14, 1927. 8 claims. (Cl. 92-27).

1,994,066. Colored prepared roofing. Paul S. Denning, assignor to Frederic E. Schundler, Joliet, Ill. Filed Aug. 4, 1930. 1 claim. (Cl. 91-68).

1,994,073. Composition for impregnating wood and other cellulosic materials. Ernest F. Hartman and Willet F. Whitmore, assignors to Protexol Corporation, Kenilworth, N. J. Filed July 12, 1930. 5 claims. (Cl. 134-78.6).

1,994,198. Heating device for wood pulp digesters. Einar Morterud, Oslo, Norway. Filed Oct. 4, 1934. 2 claims. (Cl. 92-7).

1,994,280. Drier felt for use on paper making machines. Thomas Hindle, Blackburn, England. Filed April 21, 1932. 2 claims. (Cl. 139-410).

1,994,283. Manufacture of abrasive paper. Harry C. Martin, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed July 16, 1932. 6 claims. (Cl. 51-278).

1,994,435. Paper manufacture. Benjamin F. Perkins, Holyoke, Mass. Filed Nov. 3, 1933. 2 claims. (Cl. 154-55). A creped laminated sheet from a sheet of velour paper and one of finished paper.

March 19, 1935

R19,504. Flanged reenforced paper article and process of making same. Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Original No. 1,870,062, dated Aug. 2, 1932. Reissue filed April 3, 1934. 26 claims. (Cl. 93-36).

1,994,665. Web feeding mechanism for bag machines. George W. Poppe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed June 21, 1933. 3 claims. (Cl. 93-18).

1,994,750. Typewriter paper of deferred indelibility and method of preparing the same. John G. Callan, Cambridge, Mass. Filed Sept. 23, 1933. 16 claims. (Cl. 91-68). A coating which permits slow penetration of the ink.

1,995,011. Machine for removing water from wood pulp, cellulose and the like. Olaf Qviller, Oslo, Norway. Filed June 26, 1934. 4 claims. (Cl. 92-36).

1,995,032. Apparatus for making roofing. Arthur G. Leonard, Jr., assignor to Orenda Corporation, Chicago, Ill. Filed May 7, 1932. 11 claims. (Cl. 91-59).

1,995,057. Indented paper. William H. Ellis, Jr., Glendale, Ohio. Filed May 15, 1933. 2 claims. (Cl. 154-33).

1,995,101. Paper making apparatus. Percy Andrew Jackson, assignor to American Writing Paper Company, Inc., Holyoke, Mass. Filed Nov. 18, 1933. 1 claim. (Cl. 92-43). A vat and cylinder mold.

1,995,145. Manufacture of artificial boards and like structures. Orcutt W. Frost, assignor to Wood Conversion Company, Cloquet, Minn. Filed March 26, 1932. 5 claims. (Cl. 92-41).

1,995,264. Composite structural unit. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Nov. 3, 1931. 1 claim. (Cl. 20-7). Flooring unit consisting of soft cushioning porous insulation board with surfaces of hard dense non-porous composition board.

March 26, 1935

1,995,455. Machine for the manufacture of paper containers. Ernst Hermann Jahne, assignor to "Universelle" Cigarettenmaschinen-Fabrik J. C. Muller & Co., Dresden, Germany. Filed Sept. 16, 1931. 18 claims. (Cl. 93-44).

1,995,561. Conduit valve for paper pulp lines and the like. Joseph Belanger and Ernest Durnin, Escanaba, Mich. Filed Nov. 23, 1931. 3 claims. (Cl. 137-139).

1,995,586. Manufacture of paper. Alfred Schopper, Bruno Possanner von Ehrenthal and Ernst Unger, assignors to the firm Louis Schopper, Leipzig, Germany. Filed Oct. 11, 1933. 22 claims. (Cl. 92-39). Method of forming a test sheet.

1,995,623. Manufacture of impregnated articles. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Jan. 20, 1932. 8 claims. (Cl. 91-70). Method of impregnating with a dispersed waterproofing agent in the presence of a wetting-out agent.

1,995,677. Machine for producing a twisted edge along the one side of a length of crepe paper. Oscar Valfrid Jönsson, Halsingborg, Sweden. Filed Feb. 23, 1934. 5 claims. (Cl. 41-2).

1,995,802. Paper making machine. George J. Forman, Montville, Conn. Filed Oct. 20, 1934. 12 claims. (Cl. 92-43). Arrangement of a cylinder which substantially divides the vat into two chambers.

1,995,900. Production of bast fibers for paper making and other purposes. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Dec. 28, 1932. 7 claims. (Cl. 92-8). Method of cutting bast fiber-bearing stalks, digesting the material and selectively removing the bast fibers.

1,995,904. Manufacture of roofing or siding material. John C. Sherman, assignor to Brown Company, Berlin, N. H. Filed May 19, 1934. 5 claims. (Cl. 92-39).

1,995,999. Evaporation of solutions. Erik Öman, assignor to Industrikemiska Aktiebolaget, Stockholm, Sweden. Filed Feb. 4, 1931. 4 claims. (Cl. 34-48). Method of utilizing drying air from paper machine for evaporation of liquors.

TAPPI Kalamazoo Section Discusses Bleaching

A meeting of the Kalamazoo Valley Section of TAPPI was held April 4 at 7:30 P.M. in the offices of the Bryant Paper Company.

The meeting was called to order by Chairman H. M. Annis. He announced the appointment of two committees of the following membership: Program Committee, F. D. Libby, Kalamazoo Vegetable Parchment Company, Kalamazoo, chairman; Henry Heller, Paper Makers Chemical Corporation, Kalamazoo; I. R. Valentine, Lee Paper Company, Vicksburg, Michigan. Arrangements Committee, A. C. Dreshfield, Paper Makers Chemical Corporation, chairman; P. W. Bartholomew, Paper Makers Chemical Corporation; John Bauman, Kalamazoo Vegetable Parchment Company; Severns Balch, Watervliet Paper Company.

Out of respect for the memory of the late Frick Colligmon, the entire membership stood in silence for one minute.

Abstracts of Data on Bleaching

The first speaker was W. J. White of the Kalamazoo Vegetable Parchment Company who presented "Abstracts of Data on Bleaching." This was a summary of selected bleaching literature published during the last three years. The speaker was mainly concerned with references in the literature to a comparison between hypochlorite bleaching and chlorination, the effects of consistency, temperature and bleaching time. Some time also was devoted to the chemistry of chlorination, several papers on this topic being reviewed. Several of the most recent bleaching patents were described, attention being drawn to the fact that conflicting statements were made in support of claims for the separate patents. It was the speaker's conclusion because of the apparent conflict on several of the vital points in bleaching, that bleaching may still be considered an art rather than a science.

Two-Stage Method for Bleaching Sulphite

"Description of a Two-Stage Method for Bleaching Sulphite," was presented by A. B. Perlick of the Kalamazoo Vegetable Parchment Company. Mr. Perlick described a typical batch bleaching process in which the first stage consisted of a chlorination at low density and the second stage consisted of treatment with hypochlorite at high density. The steps were reviewed in order starting with the manufacture of bleach liquor in a milk of lime tower system. Methods of washing, thickening and conveying stock were discussed. He also covered the question of construction materials and described the methods of handling chlorine gas. Control of the different operations was described, including control of bleach liquor strength by the operators and standardization of the color of the finished bleached pulp by means of comparison with standard hand sheets. The advantages of a batch system were stated in that close control may be exercised on each batch so that uniform results are obtained.

Cooking and Bleaching of Old Papers

On the subject of "Cooking and Bleaching of Old Paper," E. G. Milham of the Watervliet Paper Company, answered several general queries on the subject but reserved a full explanation of this topic until later in the evening when the group visited the old paper converting plant of the Bryant Paper Company.

Refreshments were served by the committee on arrangements and the entire group then took advantage of the opportunity to visit the Bryant mills.

Those Who Attended

Those who attended were: R. J. Egan, Bulkley, Dunton & Co., Chicago, Illinois; J. A. Wise, Kalamazoo Paper Company, Kalamazoo; P. J. Abel, Stickel Steam Specialty Company; V. R. Vroswell, Paper Makers Chemical Corporation, Kalamazoo; M. R. Wilkins, Bryant Paper Company, Kalamazoo; R. A. Hayward, Kalamazoo Vegetable Parchment Company, Kalamazoo; G. B. McAlister and P. H. Gideon of the Bryant Paper Company; M. J. Loveland and W. J. Higbie of the Paper Makers Chemical Corporation; W. S. Taylor, American Cyanamid and Chemical Corporation; H. C. Smith, W. Kottman and R. H. Hurst of the Kalamazoo Vegetable Parchment Company; Robert Geis and Clarence White of the Bryant Paper Company; J. E. Orvis and G. E. Hay of the Michigan Carton Company, Battle Creek, Michigan; H. R. Miller, Paper Makers Chemical Corporation; J. H. Weber, Ed Osborn and M. C. Mulder, Allied Paper Mills; A. B. Perlick Kalamazoo Vegetable Parchment Company; R. F. Irwin and E. A. Radant, Paper Makers Chemical Corporation; M. F. Flotow, French Paper Company, Niles, Michigan; L. L. Griffiths, Jr., Heller & Merz Company; W. J. White, Kalamazoo Vegetable Parchment Company, G. T. Ingling, Kalamazoo Paper Company; H. M. Eastman and N. W. Milham of the Paper Makers Chemical Corporation; H. G. Doyen, Ivan Randall, J. D. Stocker and Jack Haines of Allied Paper Mills; V. C. Mathis of Bryant Paper Company; H. S. Faram and Severens Balch, Watervliet Paper Company; A. C. Dreshfield, Paper Makers Chemical Corporation; J. C. Wood and F. E. Wotalewicz of Kalamazoo Vegetable Parchment Company; J. T. Russell, Bryant Paper Company; M. Redmond, Kalamazoo Paper Company; F. D. Libby and R. B. Stewart, Kalamazoo Vegetable Parchment Company; J. E. Dennany and H. M. Annis, Allied Paper Mills; A. B. Milham, Bryant Paper Company; W. C. Ward, Kalamazoo Vegetable Parchment Company; E. G. Milham, Watervliet Paper Company; J. E. Bauman, Kalamazoo Vegetable Parchment Company; D. W. McCready, University of Michigan, Ann Arbor, Michigan; H. F. Heller, Paper Makers Chemical Corporation; W. F. Hathaway, Kalamazoo Vegetable Parchment Company.

Chilean Newsprint Making Progress

The quality of newsprint paper produced in Chile is being steadily improved, according to a report to the Commerce Department from Assistant Commercial Attache H. M. Randall, Santiago.

Aided by the relatively high cost of imported newsprint, owing to Chilean currency depreciation, the domestic industry finds itself handicapped only by the scarcity of needed raw materials, the report states.

The industry is now attempting to produce more cellulose for various paper products and it is the plan of the industry to double its present capacity for newsprint paper within the course of the next two years.

The present capacity of the single company producing newsprint in Chile is 6,000 tons annually and this total represents the approximate production in 1934, the report states.

Imports of newsprint into Chile during 1934 amounted to 10,500,000 kilograms, of which Canada accounted for more than 80 per cent.

The Effect of Temperature on the Beating of Rag Stock*

By Harry F. Lewis[2] and LaVern A. Gilbertson[3]

Abstract

A temperature-controlled Noble and Woods twenty gallon beater has been used in a study of the changes taking place in the beating characteristics of rag stock as the result of variations in temperature between 6 and 85 degrees C.

The results indicate that the rate of beating is somewhat faster at 25 degrees than at either 6 or 45 degrees, while the slowest beating of all takes place at 85 degrees. By rates of beating is meant the time required to reduce the stock to a given freeness under controlled beating.

Hand sheets made from the stock beaten at 6 deg. C. have folds of 6125, tear (16 sheets) of 182, Mullen of 49, and tensile of 12.42 pounds. Those beaten at 85 degrees show the following values for the same tests: Folding endurance, 240; tear (16 sheets), 125; Mullen, 28; tensile, 9.33 pounds.

Chemical constants, such as α-cellulose, copper number, and viscosity, are unaltered either by the time or temperature of beating.

Photomicrographs at the point of Mullen rupture show that such a rupture occurs in the cold beaten stock by the fibers pulling out; with the hot beaten stock, the fibers appear to be brittle and the break results from the fracture of the fibers as well as fracture of cementing material.

Ever since the beater has been used in paper making, the process of beating has been subject to considerable investigation, most of which has dealt with the theory of beating. Similar to the other processes in the manufacture of paper, the beating process has its quota of variables which must be controlled in order to obtain the desired product. Several of these variables which must be considered are: The type of roll, the number and type of flybars, the speed of the roll, the pressure of the roll on the bedplate, the consistence of the stock, the temperature of beating, and numerous others.

The object of this investigation herein reported has been to study this last named variable, namely, the temperature of beating, especially as it relates to the beating of rag stock. The study is directed to rag stock largely because of the fact that the prior knowledge in the field is based almost entirely upon isolated mill observation—and this as it relates to differences in the quality of paper made in summer and winter. In the face of these observations, attempts have been made to utilize the apparent advantage of making rag paper in the winter by such expediencies as drilling deep wells for a cold water supply or installing refrigerating systems. In the case of the cold well water, it is possible to furnish the heater with cold water at the beginning of beating. By the end of the operation, however, the temperature of the stock in the beater may rise as high as 60 or 70 deg. C.

In carrying out the work, new rag stock has been beaten at four different constant temperatures. In a fifth case, beating has been carried out at a low temperature for the first half of the beating time and at a high temperature for the remainder and in a sixth case has been begun at a high temperature and finished at a low temperature. Changes in the physical and chemical characteristics of hand sheets have been followed. Finally, two check runs have been made, using a poorer grade of rag stock, one carried out at a low temperature throughout; the other started cold but allowed to warm up during the last half of beating.

Historical Review

While a vast amount of study has been given to the beating problem, a survey of the literature reveals that comparatively little has been done covering the extent of the temperature effect during beating. What has been done in an experimental way has been carried out largely with wood pulps. Actual data in connection with temperature effects in the beating of rag stock are largely from the difference in mill operation during summer and winter.

Stephenson *(8)* and his students at the University of Maine have studied the effect of a number of variables on the beating of sulphite pulp. Using temperatures of 23, 50 and 65 deg. C., they find that increased temperature decreases folding endurance, stretch, bursting strength, and breaking length of the resulting paper. Stretch is the least affected.

On the basis of mill experience, Hatch *(4)* reported that as the temperature of the water in the beater rose above 75 deg. F., the strength of papers took a decided drop and also that as the temperature rose, the sizing was poor.

An anonymous writer *(3)* comments as follows: "An objectionable feature in connection with beating is the heating of the furnish in the beater which frequently renders it difficult to work the 'stuff' on the machine owing to the freeness thus caused." Heating also causes difficulty in obtaining hardness of sizing, owing to the formation of much smaller particles of rosin under the influence of heat, with a consequent loss of rosin through the machine wire. Breaking lengths were decreased from 10,000 to 12,000 to 6,000 to 7,000 meters. In a series of experiments on writing papers, the same faults were found. After six hours of beating, the temperature increased from 20 to 55 deg. C.

Sindall and Bacon *(7)* found that low temperature favored the production of "wet" stuff.

Smith *(1)* in his book "The Action of the Beater," stated that the freeness was high when the temperature was increased, this being due to the decrease in viscosity of the water. For an increase in temperature from 5 to 30 deg. C., the rate of drainage was almost doubled. Upon heating, the fibers were dehydrated, causing them to shrink and become thinner. At the same time, the interstices between the fibers became larger and, since they represented capillaries, the water was able to drain away more rapidly than it would if the size of the fiber had remained unchanged.

In another article *(5)*, it was stated that when the stock

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.

[1] Submitted by the junior author as a thesis in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Master of Science.

[2] Member TAPPI, Professor of Organic Chemistry, The Institute of Paper Chemistry, Appleton, Wis.
[3] Graduate Student, The Institute of Paper Chemistry, Appleton, Wis.

was allowed to become heated above a certain temperature in the beater, dehydration took place.

McGregor *(6)* has concluded that the velocity of imbibition of water in saturated or air-free specimens of wood cellulose is increased by pressure and cold, but diminished by heat. Hydration of the fibers during beating is considered to be the increment of water imbibed during the disintegration and fibrillation of the cellulose.

Andrews *(2)* has suggested an improved method of beating in which hot water is used with an Unkel extractor. He neglected, however, to disclose its advantages and disadvantages.

It has long been known that when stuff or stock for the paper machine is too "slow" or "wet," it can be made free by heating with steam.

Statement of the Problem

In the light of the above, and in view of the scarcity of scientific data on the effect of temperature on the beating of rag stock, this study was undertaken. Three specific problems were carried on, which included:

1. A determination of the physical changes produced on the hand sheets by a variation in the temperature of beating of rag stock. The strength characteristics determined were: Mullen, tear, fold, tensile, and stretch.
2. A determination of the chemical changes produced by a variation in the temperature of beating of rag stock. The chemical constants determined were: Alpha-cellulose, copper number, and cuprammonium viscosity.
3. A photomicrographic study of the morphological changes in the pulp resulting from a variation in the temperature of beating of rag stock, and also a study of the mechanism of bursting as indicated by photomicrographs of the edges of the breaks made on the Mullen tester.

The following temperatures were studied: 6, 25, 45, and 85 deg. C., and combinations of 6 to 85, 85 to 6, and 6 to 40 deg. C.

Experimental Procedures

In carrying out the study as outlined, an experimental beater was equipped for temperature control in such a way that temperatures between 6 to 85 deg. C. could be carried in the beater. Bleached rag stock was beaten under carefully controlled conditions at various temperatures, and hand sheets were made at three freenesses, namely, 700, 500, and 300. On these hand sheets were made the physical, chemical, and photomicrographic studies.

A. EQUIPMENT.

1. Beater:

The beater used was of the following type: Face diameter of roll, 10 inches; left hand type; capacity, 20 gallons; roll speed, 180 r.p.m.; manufacturer, The Noble and Wood Machine Company, Hoosick Falls, N. Y.

2. Sheet Making Apparatus:

Sheets were made on a Williams sheet making outfit. This consists of an agitator, sheet mould, press, and electric drier.

3. Physical Testing Equipment:

a. Mullen	motor driven Perkins' Mullen tester.
b. Tear	Elmendorf tear tester.
c. Fold	Schopper-Riegler folding tester.
d. Tensile and stretch	Schopper-Riegler tester.
e. Basis weight	Thwing Basis weight scale.
f. Freeness	Schopper-Reigler freeness tester.

B. HALF-STOCK.

1. New rags known to the trade as No. 1 muslins.
2. Old rags known to the trade as seconds and blues.

C. PROCEDURES.

1. Beating:

After the beater had been furnished with 165 pounds of water and the water had been brought to the desired temperature, the roll was adjusted to the zero point and then raised 20 turns above zero. The zero point was that setting at which the roll just touched the bedplate. With the roll setting at + 20 turns, 1850 grams (1700 oven-dry) of the rag half-stock were furnished to the beater. This gave a consistency of 2.4 per cent (oven-dry). The roll setting was maintained at + 20 turns for 60 minutes, when it was lowered 10 turns and maintained there for 60 minutes. At the end of this time, the roll was lowered 5 turns and remained there for 45 minutes, after which it was lowered 2 turns. In the following three 45 minute periods, the roll was lowered 3, 1, and 1 turns respectively, so that the final setting was — 2.

This procedure was selected in order to produce a drawing out effect upon the fibers, rather than a sharp cutting action.

Samples for sheets were taken out at freenesses of about 700, 500, and 300. In some cases, the freeness of 300 was reached before the roll setting was — 2.

In order to control the temperature, the beater was equipped with iron pipe coils fitted around the inside of the tub wall and connected to a steam line and cold water line, so that temperatures from 6 to 85 deg. C. were possible. Evaporation at 85 deg. C. was eliminated by equipping the heater with a tight fitting galvanized iron cover.

The regulation of temperature in the beater runs where combination temperatures were used was accomplished as follows:

a. *Beater Run No. 11420 (6 to 85 deg. C.)*

The temperature was maintained at 6 deg. C. for the first 2.75 hours, after which time it was raised to 85 deg. C. and there maintained until the end of the run.

b. *Beater Run No. 11422 (85 to 6 deg. C.)*

The temperature was maintained at 85 deg. C. for the first 2.5 hours, after which time it was lowered to 6 deg. C. and there maintained until the end of the run.

The reason for maintaining the first temperature in (b) fifteen minutes less than in (a) was because the rate of cooling the beater contents required a slightly longer time than did the heating.

2. Freeness Testing:

For freeness tests, a sample of 300 cc. taken in a cup holding exactly that quantity, was diluted with 3300 cc. of water, the temperature of which was so regulated that the diluted stock had a temperature of 20 deg. C. One liter of this mixture contained 2 grams of oven-dry stock; the freeness of this was determined in the Schopper-Riegler tester.

In preliminary runs, it was found possible, based upon freeness and tear, to make check beater runs. It was therefore decided to make only one run at each temperature.

3. Sheet Making and Testing:

For sheets, a sample of 3 liters of stock, taken in a one liter cup, was diluted with 9 liters of water. One liter of this, when formed on the Williams sheet mould, resulted in a 24 pound sheet on a writing basis (17x22—500). At least five sheets were made from every sample.

The method of making sheets was as follows: One liter of the above diluted stock mixture, when diluted with 2 liters of water, was agitated for exactly 2 minutes by means of the Williams agitator. This suspension was poured into 6 liters of water in the Williams sheet mould, agitated slowly up and down for several times by means of a hand agitator, and the drain valve released.

A damp blotter, a dry blotter, and a damp felt were

placed upon the newly formed sheet, the wire removed, and the whole placed in the Williams press at 5 pounds' gauge pressure for exactly one minute. The felt and blotters with the sheet adhering were lifted from the wire, a damp felt placed next to the sheet, and the felts, blotters, and sheet pressed for exactly 2 minutes on each side at 300 pounds' gage pressure. The sheet was then removed and dried for exactly 3 minutes on each side using the Williams electric drier, the canvas cover of which was so adjusted as to give maximum tension.

The damp blotters and felts were prepared by pressing saturated blotters and belts for 2 minutes at 300 pounds' gauge pressure. The dry blotter for one sheet became the damp blotter for the next. A number of felts were used in rotation after first saturating and pressing as above.

The sheets thus prepared were trimmed to 8x10 inches and conditioned in the humidity room, which was maintained at 70 deg. F. and 65 per cent r. h. The basis weight of each sheet was determined with the Thwing basis weight scale. The instrument was previously calibrated so that a deflection produced by an 8x10 inch sheet, when multiplied by a factor (4.675), gave the ream weight on a 17x22—500 basis. The basis weights of the sheets deviated slightly from 24 pounds, so that it was necessary, in the case of the Mullen and tear tests, to correct the results to 24 pounds by assuming tearing and bursting strengths proportional to basis weight. For the other strength tests, were chosen sheets of as near the same weight as possible. One sheet was used for the bursting strength, one for tear, and one for tensile, stretch and fold.

The number of tests for each type of test was as follows: Mullen 9, tear 8, fold 6, and tensile and stretch 6.

In each case, the results were averaged.

4. Chemical Analyses:

Analyses were made on original and beaten stocks. In the case of the beaten stocks, the samples analyzed were those taken at freenesses of 700 and 300.

a. Alpha-cellulose determinations were made according to the method as outlined in TAPPI Standard T. 203 m.

b. Copper numbers were determined by the Schwalbe-Braidy method as outlined on page 273 of the Technical Association Papers for May, 1930.

c. Cuprammonium viscosities were determined by the method of Bialkowsky as outlined in TAPPI Standard T 206 m.

5. Photomicrographic Studies:

After the completion of the above series of temperature controlled beater runs, it seemed desirable to make a photomicrographic study of the relative differences in amount and type of fibrillations and "gel" formation. This was carried out through the cooperation of J. H. Graff of the staff of The Institute of Paper Chemistry, and included:

a. Photomicrographs of the stock after various times and temperatures of beating.

b. Photomicrographs of the fiber structure at the edges of the burst in the Mullen test.

For these, it was necessary to carry out three additional beater runs at temperatures of 6, 25, and 85 deg. C.

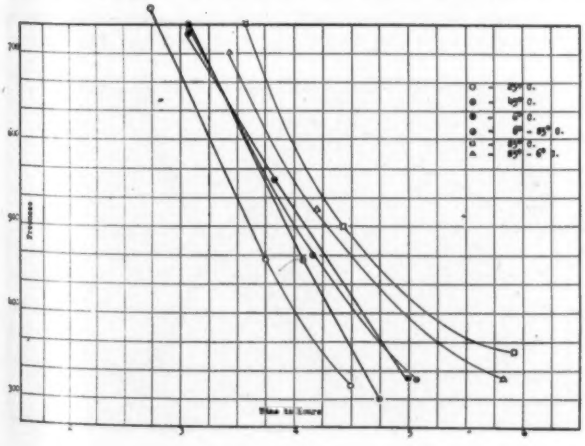

FIG. 1
Relation between rate of beating and temperature with new rags.

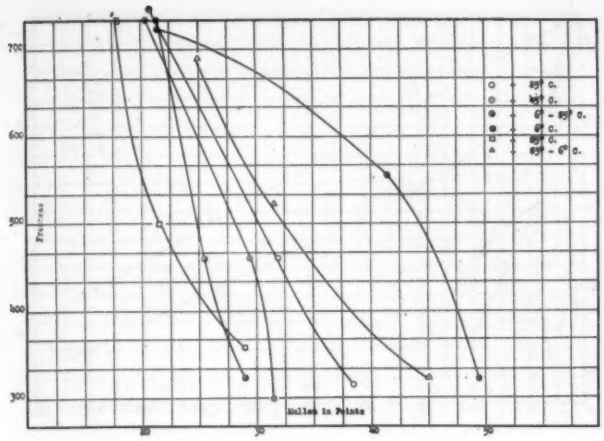

FIG. 2
Relation between Mullen and temperature with new rags.

Summary of Experimental Data and General Discussion

The data resulting from the studies outlined under Experimental Procedures have been tabulated and graphically illustrated in the following pages. The work done is reported in the same order as that outlined in the experimental procedure; namely, the measurement of the rate of hydration and strength tests, changes in chemical constants, and finally, the results of the photomicrographic work.

A. PHYSICAL TESTING.

1. Rate of Hydration:

The data on the relation of the rate of beating to the temperature of beating are found in Table I, and are illustrated graphically in Fig. 1. The results indicate rather conclusively that hydration is most rapid at a temperature of 25 deg. C., while with either a decrease or an increase in temperature the rate slows up, that at 6 deg. C. being somewhat slower than at 45 deg. C. Of practical interest is the fact that the stock beaten in the first half of the required time of beating at 85 deg. C., followed by cooling to 6 deg. C. for the second half of the time, hydrates some-

TABLE I
SUMMARY OF PHYSICAL TESTS ON NEW RAGS

Beater Run No.	Temperature in Degrees C.	Freeness	Time to Freeness (min.)	Mullen in Points	Mullen Points per lb.	Tear (16) in Grams	Double Folds S-R	Tensile in Pounds	Stretch in Per Cent
11418	6	720	185	23	0.96	229.0	231	6.28	3.68
11418	6	550	230	43	1.80	212.0	2447	10.47	4.72
11418	6	320	300	49	2.04	182.0	6125	12.42	5.00
11410	25	750	165	22	0.92	218.0	104	5.47	4.40
11410	25	460	225	34	1.41	190.0	918	9.60	4.00
11410	25	315	270	37	1.54	168.0	1730	11.37	3.92
11412	45	730	185	21	0.88	226.0	88	5.92	3.80
11412	45	460	246	29	1.21	178.0	622	11.40	6.60
11412	45	300	285	33	1.37	152.0	1274	13.00	5.30
11414	85	730	215	18	0.75	168.0	33	5.70	3.40
11414	85	500	265	23	0.96	143.0	89	7.86	2.88
11414	85	350	355	28	1.16	125.0	240	9.33	2.80
11420	6—85	720	185	23	0.96	231.0	61	4.57	3.60
11420	6—85	460	250	26	1.08	175.0	423	8.42	4.40
11420	6—85	320	308	28	1.17	140.0	333	8.04	4.90
11422	85—6	700	205	25	1.04	234.0	124	5.04	3.80
11422	85—6	520	250	33	1.37	200.0	1553	9.17	4.20
11422	85—6	320	350	45	1.87	173.0	4670	11.31	5.91

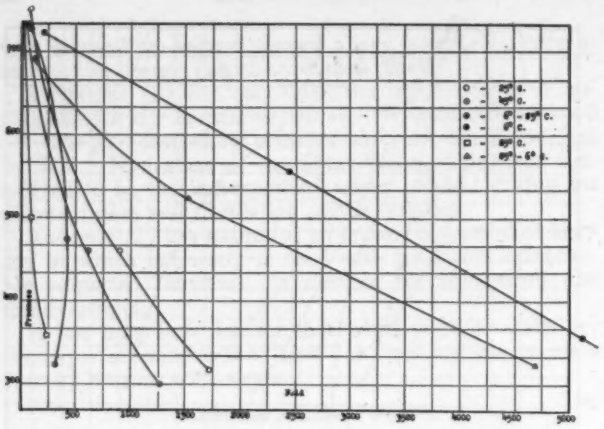

FIG. 3
Relation between fold and temperature with new rags.

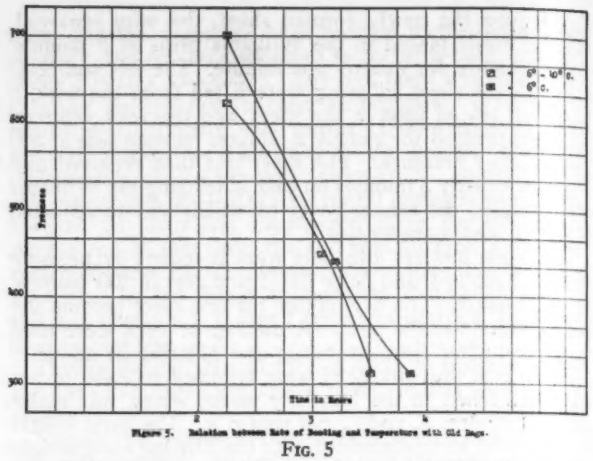

FIG. 5
Relation between rate of beating and temperature with old rags.

what more rapidly than the stock beaten for the entire time at 85 deg. C.; whereas the comparison run, starting at 6 deg. C. and ending at 85 deg. C., almost duplicated the run which was carried out entirely at 6 deg. C. In other words, it would appear as though the temperature during the first half of the beating period has a much greater influence upon the rate of beating during the last half of the beating period than does the actual temperature during this latter period.

2. Relations between the Temperature of Beating and the Physical Characteristics of Hand Sheets:

As was pointed out earlier, eight different temperature runs were carried out, six of these being made with new rag stock and two with old rag stock. The strength figures for the hand sheets made in these various runs using the new stock appear in Table I, and are graphically illustrated in Figs. 2, 3, and 4. Strength changes for the beater runs made on the old stock appear in Table II and in Figs. 5, 6, 7, 8 and 9. Certain generalities are apparent from a glance at the illustrations. In every case, the stock which was beaten at 6 deg. C. gave hand sheets of maximum strength in all strength characteristics; as the temperature of beating was raised, the physical quality of the sheets was lowered. This is especially the case in the folding tests. Stock which was beaten at a temperature of 85 deg. C. showed a measurement of fold of 250, while that beaten at 6 deg. C. had a fold of 6125, a remarkable increase. Similar differences in tear of the stock are noticeable; at a freeness of approximately 300, the stock beaten hot had a tear of 125, while the corresponding value for the cold beaten stock was 182. The increase in Mullen was from 28 to 49.

TABLE II
SUMMARY OF RESULTS ON OLD RAGS

Beater Run No.	Temperature in Degrees C.	Freeness	Time to Freeness (min.)	Mullen in Points	Mullen Points per lb.	Tear (16) in Grams	Double Folds S-R	Tensile in Pounds	Stretch in Per Cent
11424	6	700	135	22	0.92	166.0	78	6.54	2.34
11424	6	440	190	32	1.33	115.0	337	8.43	4.40
11424	6	315	230	34	1.40	100.0	495	10.17	5.60
11426	6—40	620	135	24	1.00	151.0	113	6.85	4.20
11426	6—40	450	185	29	1.21	109.0	166	8.15	4.80
11426	6—40	315	210	31	1.29	88.0	126	8.90	5.40

Of particular significance in connection with the commercial beating operation is the fact that the stock which is beaten hot for the first half of the beating period and cold for the last half, has strength values closely resembling the stock beaten cold throughout. And vice versa, the stock beaten cold for the first half of the beating period and hot for the last half, has the characteristics of the stock beaten hot throughout. In other words, the temperature of the last half of the beating period controls the strength of the stock, regardless of the temperature of the first half, other things being equal.

In actual mill operation, the beating is started at the

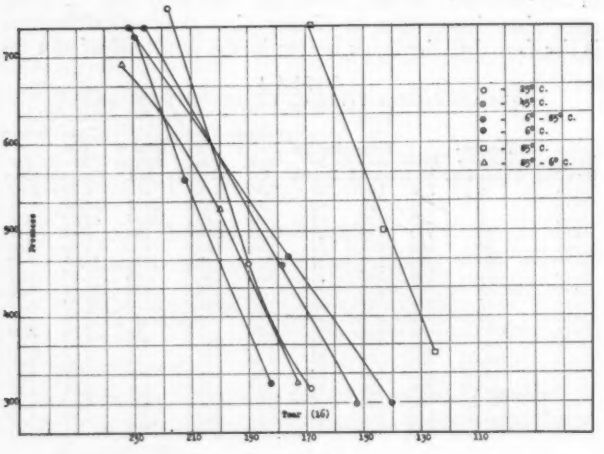

FIG. 4
Relation between tear and temperature with new rags.

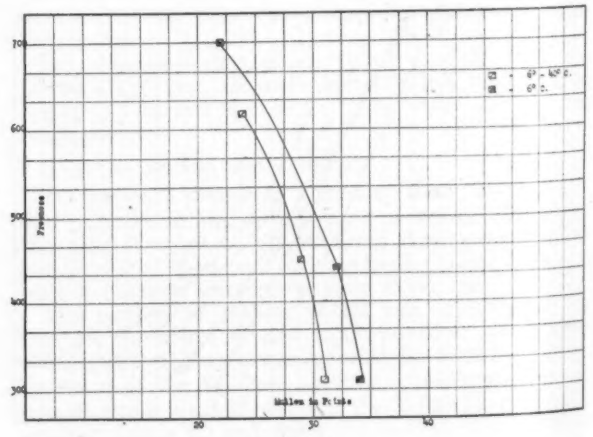

FIG. 6
Relation between Mullen and temperature with old rags.

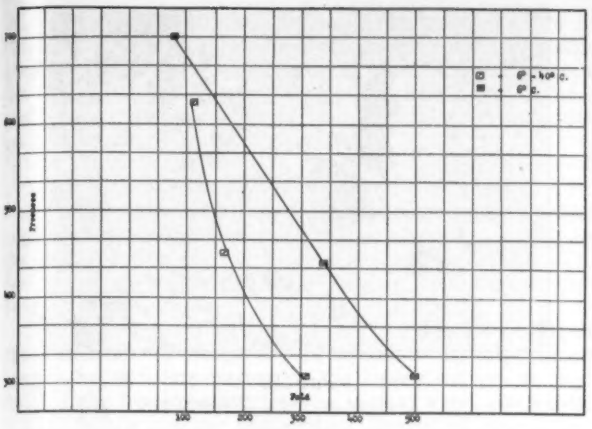

FIG. 7

Relation between fold and temperature with old rags.

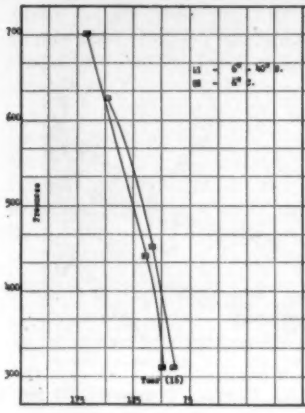

FIG. 8

Relation between tear and temperature with old rags.

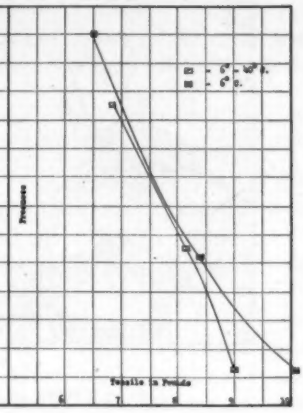

FIG. 9

Relation between tensile and temperature with old rags.

temperature of the water furnished to the beater. In the winter time, the temperature of such water will be relatively low; on the other hand, the temperature in the summer will depend entirely upon the source. Mills using river water may find the temperature as high as 21 deg. C. (70 deg. F.) During the progress of the beating, the temperature remains fairly constant for the first half of the beating time, and then slowly rises. Before the end of the operation, it may get as high as 60 to 70 deg. C. (140 to 158 deg. F.) Such a procedure would appear to favor an increased rate of beating, but is certainly productive of an inferior product from a strength standpoint. The best operation in the latter case would be brought about if it were possible to maintain a temperature throughout beating of 20 deg. C. (68 deg. F.) or less.

Two beater runs were made using old rag bleached half-stock. The first run was maintained at a temperature of 6 deg. C. throughout. In the second a temperature of 6 deg. C. was kept during the first half of the beating period, after which it was increased to 40 deg. C. where it was maintained for the remainder of the beating period. This gave a condition somewhat the same as that actually obtaining in the mill. The expected differences in strength of the hand sheets appear, cold beating favoring folding endurance in the ratio of 495 to 126, tear in the ratio of 100 to 88, Mullen in the ratio of 34 to 31, and tensile in the ratio of 10.17 to 8.90, all values being taken at 300 freeness. These differences, calculated to a percentage standpoint, indicate roughly that the strength characteristics of old rag bleached half-stock are approximately 10 per cent better when that stock is beaten continuously at a temperature of 6 deg. C. than when the temperature is permitted to rise to 40 deg. C. during the last half of the beating. In the case of the fold, the increase is approximately 400 per cent, checking to a qualitative degree the observations made with new rag half-stock, in which case the folds were increased from 250 up to 6125.

B. CHEMICAL ANALYSES.

The effect of a variation in temperature of beating upon the chemical constants of hand sheets is shown in the results of the chemical analyses in the first three beater runs listed in Table III. It is clear that as the beating proceeds, the alpha-cellulose, copper number, and viscosity of stocks remain unchanged, substantiating a number of earlier observations. It is also clear that variations in temperature of beating have no influence upon the chemical composition of the stocks, for within experimental error, the various analytical values may be said to check each other and also the original.

C. DISCUSSION OF PHOTOMICROGRAPHIC STUDIES.

1. Photomicrographs Showing the Process of Fibrillation and "Gel" Formation during Beating at Various Temperatures for Varying Times:

Three additional beater runs were made at 6, 25, and 85 deg. C. under conditions checking similar runs described in Table I. Samples were taken out at five equal time intervals and at various freenesses. The data in connection with these runs will be found in Table IV.

Photomicrographs were then taken of prepared slides of the five selected samples at each temperature, two from

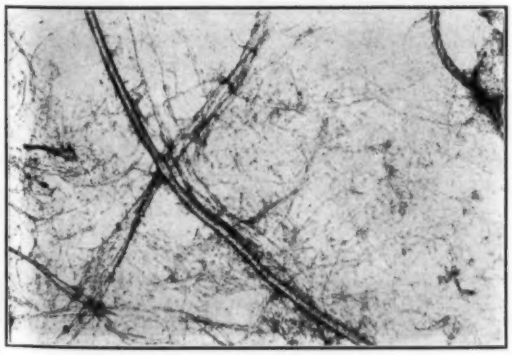

FIG. 10A

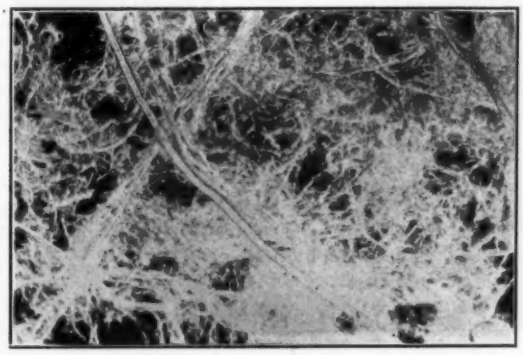

FIG. 10B

Time of Beating: 5 hrs. 40 min. Temperature: 6 deg. C. Magnification: 175 (Reduced one-half). Freeness: 335.

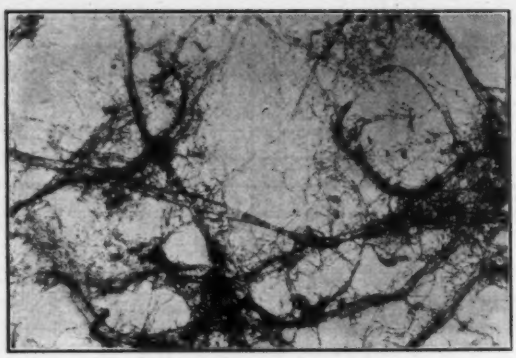

FIG. 11A

Time of Beating: 5 hrs. 40 min. Temperature: 85 deg. C.

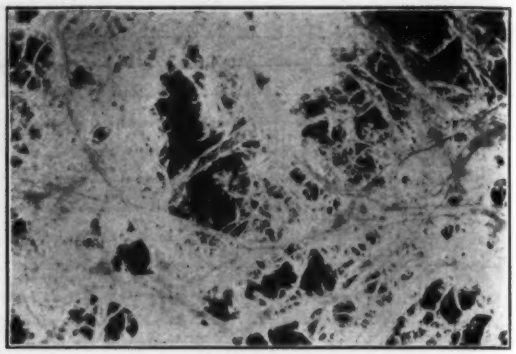

FIG. 11B

Magnification: 175× (Reduced one-half). Freeness: 350.

one field of each sample; the first was made with transmitted light to show fibrillation, the second with dark field illumination to show "gel" formation. The magnification was 175 diameters. Of these photomicrographs only two sets are shown, Fig. 10 A and 10 B and Fig. 11 A and 11 B. The "A" sample has been taken with transmitted light and the "B" sample with dark field illumination. Fig. 10 A and 10 B are taken at a time of beating of 5 hours and 40 minutes, with a freeness of 335 and a temperature of 6 deg. C. Fig. 11 A and 11 B are taken under similar conditions except that the temperature of beating was 85 deg. C. It is apparent that fibrillation and "gel" formation are most pronounced in the samples beaten at 6 deg. C., where it is noticeable even in the earliest sample taken after 2¾ hours of beating. Undoubtedly this "gel" formation is related to the "greasy feel" noticeable in cold beating even during an early period. At the end of the time specified, it is apparent that fibrillation has resulted in the disappearance of almost all the original fibers in the case of the cold beating, whereas these remain to a considerable extent at the elevated beating temperature.

TABLE III
SUMMARY OF CHEMICAL TESTS ON NEW RAGS

Beater Run No.	Temperature Degrees C.	Per Cent Alpha-Cellulose	Copper Number	Viscosity Centipoises
Original	..	96.95	.242	66.0
11418	6	96.15	.229	70.0
11418	6	96.65	.218	70.0
11410	25	96.14	.245	74.0
11410	25	96.6	.252	74.0
11414	85	96.5	.225	66.0
11414	85	97.0	.235	63.0

TABLE IV
ORDER OF TAKING SAMPLES FOR PHOTOMICROGRAPHIC STUDY

Beater Run No.	Temperature Degrees C.	Freeness	Time of Sample
11449	6	...	Unbeaten
11449	6	...	2 hrs. 45 min.
11449	6	700	3 hrs. 40 min.
11449	6	490	4 hrs. 40 min.
11449	6	335	5 hrs. 40 min.
11451	25	...	Unbeaten
11451	25	...	2 hrs. 45 min.
11451	25	640	3 hrs. 40 min.
11451	25	350	4 hrs. 40 min.
11451	25	240	5 hrs. 40 min.
11435	85	...	Unbeaten
11435	85	...	2 hrs. 45 min.
11435	85	700	3 hrs. 40 min.
11435	85	490	4 hrs. 40 min.
11435	85	350	5 hrs. 40 min.

2. Photomicrographs Showing Edges of the Breaks Made on the Mullen Tester:

Photomicrographs have been taken of the edge of the break made on the Mullen tester from sheets in beater runs at temperatures of 6, 25, and 85 deg. C. and freenesses of 700, 500, and 300. It will be seen that the appearance of the breaks is very much the same for all three beating temperatures at the first freeness. In other words, the temperature of beating up to that time has played a relatively unimportant part in the resistance of the sheet to burst. This is also supported by the fact that the Mullen values of the various samples at the freeness of 700 are very much the same; as a matter of fact, four of the six fall within five points of each other. As beating progresses, however, the influence of temperature begins to be noticed, both with respect to strength differences and the appearance of the Mullen break. The stock beaten at 85 deg. C., having a freeness of 300 (Fig. 12), shows a very clean Mullen break with very short fibers appearing on the edges of the break, while the stock beaten at 6 deg. C. gives a vastly different Mullen break picture at a freeness of 300 (Fig. 13.) Here the long fibers show

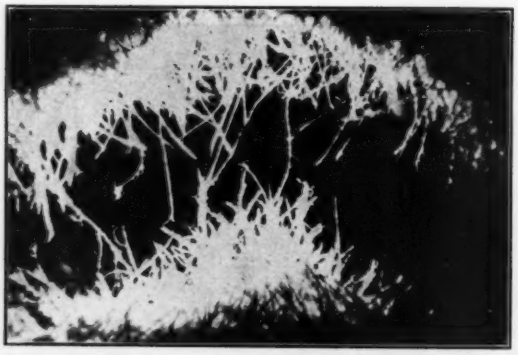

FIG. 12

Photomicrograph showing edges of Mullen breaks. Temperature: 6 deg. C. Freeness: 320. Magnification: 64× (Reduced one-half).

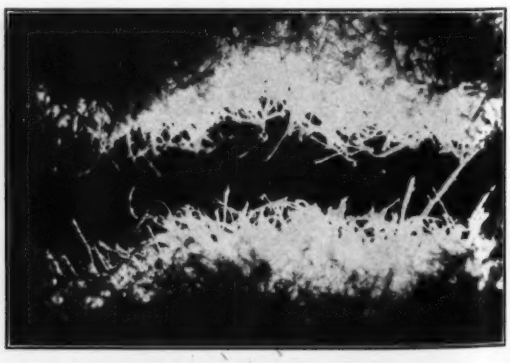

FIG. 13

Photomicrograph showing edges of Mullen breaks. Temperature: 85 deg. C. Freeness: 357. Magnification: 64× (Reduced one-half).

up on the edge. In the first case, the break appears to result from a fracture of the sheet; in the second, the slippage of the fibers is important. It should be pointed out that the stocks had been beaten for the same length of time and were at approximately the same point of freeness, the cold beaten stock being slightly slower.

Conclusions

(1) The rate of beating of rag stocks appears to be controlled to a significant degree by the temperature in the beater during the first half of the beating period. Of the temperatures studied, the rate is faster when the beating is carried out at 25 deg. C.

(2) The effect of beating temperature upon the strength characteristics of hand sheets seems to be determined largely by the temperature in the beater during the last half of the beating period.

(3) A low beating temperature favors an increase in the strength characteristics of rag stock hand sheets. An increase in beating temperature results in a decrease in strength.

(4) Low temperature beating affects both fibrillation and "gel" formation.

(5) Photomicrographs taken of the edge of a Mullen tester burst show that these bursts occur largely as the result of fiber slippage in the case of the stock beaten at low temperature; in the case of the stock beaten at high temperatures, the bursts result from a clean fracture of the sheet.

(6) Based upon the above, it would seem that the ideal beating situation would result from beating at temperatures of 25 deg. C. for the first portion of the beating period so as to accelerate the rate of beating, finishing at a lower temperature in order to obtain maximum sheet strength.

(7) The chemical constants of a stock during beating are not influenced by the temperature of beating.

Literature Cited

(1) Smith, S. The Action of the Beater. London Tech. Section, Papermakers Assoc. Gr. Brit. and Ire., pp. 21-2 (1923).
(2) Andrews, J. H. Improved Method of Beating. Paper Ind. 1: 625-7 (1919).
(3) Anon. Heating of Stuff in the Beater. Paper Makers Mo. J. 60: 7 (1922); World's Paper Trade Rev. 78: 100 (1922); Papier-Fabr. 19: 1395-1400 (1921); Wochbl. Papier-Fabr. 53: 1626-8 (1921); T.S. 75: 193 (1922).
(4) Hatch, R. S. Beating Conditions as Effected by Temperature of Water. Paper 19, No. 20: 18-9 (Jan. 24, 1917).
(5) Jenkins, F. In Discussion on D. McNeill's paper on "Beating"; par. Hydration and Dehydration. Paper Mill 46, No. 48: 16 (Dec. 1, 1923).
(6) McGregor, G. H. Hydration of Wood Cellulose. Paper Trade J. 93 No. 7; 39-42 (Aug. 13, 1931).
(7) Sincall, R. W. and Bacon, W. The Theory and Practice of Beating. Paper Makers Mo. J. 54: 110-11 (1916); C.A. 10: 2298 (1916).
(8) Stephenson, J. N. "Paper Problems" at the University of Maine Paper 17, No. 26: 16-9, 34 (Mar. 8, 1916); C.A. 10: 1267 (1916).

The Adverse Function of Gases In the Manufacture of Paper*

By Judson A. De Cew[1]

Abstract

Paper has always been made in the presence of solids, liquids and gases. The solids are the fibrous materials from which the paper is made. The liquid is water and the gases are oxygen, nitrogen and carbon dioxide.

This paper is limited to a discussion of the effects from the presence of these gases, which are always entering and escaping from the pulp mixture from which paper is made. This is apparent to everyone familiar with paper making practice.

Just what function they have in interfering with the manufacture of good paper has never been fully analyzed.

There are three forms in which gases may be present in paper making. The first form is in and on the fibers themselves, especially when the fibers have been dried. The second is in the form of bubbles entrained in the aqueous mixture, and the third is in solution in the water that carries the fibers through the various processes of manufacture.

Resistance to Wetting

Whenever dried fibers are to be prepared for paper making, they must first be made wet. A sample of dried kraft pulp immersed in water will remain relatively dry over a long period, if not disturbed. This is because the air occluded within and upon the outer surface of the fiber, has more affinity for the fiber than has the water. Before the fiber can be made wet, this adhesion of the air must be overcome by mechanically beating the fiber within the water and by a series of blows dislodging the gas in the form of fine particles which may finally escape if not dissolved.

This takes both power and time and is particularly noticeable when sized papers are to be reworked, for the air adheres very firmly to a sized fiber. It is this phenomena which destroys the capillary or wetting capacity of the fiber.

After the surface of the fiber is wet, the air that is within the cell walls, providing it is a wood fiber, must be removed. This requires a squeezing action to force the air out and the water in, but until the air is removed, the fiber is compressable and has a cushioning effect against every blow delivered by the beater knives.

Before the water can have any swelling effect upon the cell walls of the fiber, it must first establish contact and the fiber must be filled with water and its compressability removed. This partially explains the difference in beating time between a dried fiber and one that has not been dried after it is produced.

Entrained Air

The retarding effect of entrained air upon the hydration of pulp, is not always as apparent as it should be. These air bubbles also have a cushioning effect against the blows from beater and jordan bars. In stock that has a tendency to froth, a slow circulating beater may puff up to such an extent that the stock will overflow or the circulation of the pulp may stop. This is more likely to occur when the beater is alkaline but the addition of alum only allows a part of the air to escape, by increasing the surface tension.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 18 to 21, 1935.
[1] Member TAPPI, Process Engineers, Inc., Mt. Vernon, N. Y.

Every beater is an aerating machine which forces air into the pulp mass with every blow from the knives of the beater roll. The air that is entrained between the bars of the beater roll also retards the circulation of the stock.

Dissolved Gases

Let us now consider some phenomena that is not at all obvious and seems to have had very little consideration by investigators.

One thousand cubic feet of water will dissolve 20 cubic feet of air at 15 deg. C., and atmospheric pressure. Of this amount of air, 7 cubic feet is oxygen and 13 cubic feet is nitrogen. In the atmosphere the percentage of oxygen is 21 per cent, but in solution in water the percentage of oxygen increases to 33 per cent and this ratio holds with changes in temperature.

One ton of pulp in a beater will fill a volume of about 650 cubic feet. This means that every ton of paper stock at ordinary density is surrounded with water containing in solution about 4½ cubic feet of oxygen and 9 cubic feet of nitrogen.

Now the solubility of carbon dioxide in water is one volume of this gas to one volume of water, so it would be possible if enough of the gas were formed by the reaction between sulphate of alumina and carbonates that may be present in the raw water or the paper stock, to have 650 cubic feet of this gas dissolved in the water surrounding a ton of pulp at 15 deg. C. and atmospheric pressure.

The problem we are now considering is, does the presence of these dissolved gases have any chemical effect upon the cellulose fiber or any physical effect upon the rate of absorption of water by the cellulose during the process of hydration.

The gas that may have a chemical effect upon a cellulose fiber is the dissolved oxygen. Under some conditions it is possible for the cellulose fiber to absorb this oxygen with the formation of oxy-cellulose and a subsequent degradation of the fiber.

If this action takes place at all, then it will be a continuous one because the beater roll will keep the water saturated with oxygen. This can be demonstrated by observing how quickly any reducing agent will be oxidized when mixed with the stock in the beater.

The solubility of the gases given above are those existing at atmospheric pressure, so if the pulp stock should be put under a pressure of 15 pounds per square inch, then double the amount of these gases will be dissolved. Consider, therefore, how much any chemical action that takes place will be accelerated if paper stock is jordaned under a pressure of 15 pounds per square inch which is a practice introduced within the last few years and becoming more generally adopted.

There are many papers that lose much of their physical properties shortly after they are manufactured and it is more than probable that oxidation of the cellulose is the cause.

Dissolved Inert Gases and Water Absorption

Cellulose is a colloid which tends to concentrate electrolites within itself. It has a remarkable affinity for salts of iron or the anion of an alkali. It also has the capacity to adsorb gases in considerable volume. Its osmotic pressure is largely dependent upon the amount of electrolite adsorbed. If this electrolite has no chemical action upon the cellulose, then it is possible that it may reach a concentration that will retard the rate of adsorption of the water and the swelling action of the fibers called hydration.

Therefore, in order to get the most rapid penetration of the water into the cellulose without chemical or physical change, it is desirable that the water should be as pure as possible and free from electrolites, especially dissolved gases.

The neutral salts present in paper mill water which are recirculated, are chiefly sodium sulphate and calcium or magnesium sulphate if the fresh water used contains calcium and magnesium salts.

There is no way to remove these salts once they are formed but the gases can be easily removed before or during the process of hydration. This can only be done, however, by exposing the wet pulp to pressures considerably below atmospheric so that by the expansion of the gases they can escape from the interior and the surface of the fibers and also come out of solution in the water.

Under a fairly high vacuum, the gases can be practically all removed and if the stock is then worked upon mechanically, in a way that it is possible to do within a jordan, it can be treated under pressure but in the absence of any atmospheric pressure. *(1)*

The advantages gained from an operation of this kind would be as follows:

1. There is no possibility of the oxidation or degradation of the cellulose during hydration.
2. The mixture of liquid and solid would have no compressibility and the full force of the blows from the knives of the jordan would be received by the fibers.
3. There would be nothing to retard the adsorption of water by the cellulose, other than the presence of neutral inorganic salts.
4. There would be no concentration of the gases in solution owing to the increased pressure and therefore, no ebullition of gas when the pressure is removed.

The Effect of Gases Upon Drainage of Water and Felting Properties

Even if the air is all removed from the paper stock while it is being hydrated, it will be again mixed with the diluted pulp by the screening operation. This will be entrained air and not dissolved gas such as occurs in the general practice of stock preparation.

This entrained air, however, can adhere to the fibers in the form of small bubbles, which will keep the fibers from felting together and they will also retard the drainage of the water through the machine wire. Air bubbles in the process of escaping at the time of sheet formation, will push the fibers apart and cause thin spots to be left in the paper. Even if there is no froth visible on the wire, yet there are many small particles of air present, some of which will pass through the wire, but much more slowly than the water and the rest will cling to the fibers and be partly squeezed out at the press roll, but all the time they interfere with the free movement of the fibers.

As there is no time for such air to escape from the stock between the paper machine screen and the wire at atmospheric pressure, the only way to improve this condition is to pass the screened pulp through an apparatus under reduced pressure, before it goes to the paper machine. *(2)*

If such a treatment were given to the stock, it would not be necessary to use oily materials as froth killers, which are only a partial remedy and which cause other machine difficulties.

If the time ever comes when paper is made from liquids and solids only, there will be far less difficulty in operation than there is today.

Literature Cited

(1) U. S. Patent 1,704,728.
(2) U. S. Patent 1,853,849.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 6, 1935

CIGARETTE PAPER

Standard Products Corp., Champlain, Havre, 19 cs.; De Manduit Paper Corp., Washington, Havre, 231 cs.

WALL PAPER

F. A. Binder, A. Ballin, Hamburg, 1 ble.; Titan Shipping Co., Bergensfjord, Oslo, 3 ctn.; F. J. Emmerich, Antonia, Liverpool, 1 ble.; ———, Washington, Harvre, 8 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Aurania, Southampton, 12 bls.

WALL BOARDS

Treetex Corp., City of Fairbury, Helsingfors, 2451 pieces.

NEWS PRINT

Jay Madden Corp., Pr. Harding, Hamburg, 77 bls.; Perkins Goodwin & Co., Pr. Harding, Hamburg, 289 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 197 rolls; Jay Madden Corp., A. Ballin, Bremen, 134 rolls; ———, Bergensfjord, Oslo, 325 rolls; N. Y. Evening Journal, Makland, Liverpool, N.S., 285 rolls; N. Y. Tribune, Markland, Liverpool, N.S., 1618 rolls; World Telegram, Markland, Liverpool, N.S., 569 rolls; Bridgeport Herald, Markland, Liverpool, N.S., 102 rolls; Brooklyn Daily Eagle, Markland, Liverpool, N.S., 259 rolls; Gilman Paper Co., Markland, Liverpool, N.S., 481 rolls; Perkins Goodwin & Co., Deutschland, Hamburg, 94 rolls; Walker Goulard Plehn Co., Deutschland, Hamburg, 102 bls.; Jay Madden Corp., Deutschland, Bremen, 848 rolls.

PRINTING PAPER

Oxford University Press, Antonia, Liverpool, 4 cs.; F. C. Strype, Bilderdyk, Rotterdam, 8 cs.; G. J. Fijux, City of Fairbury, Helsingfors, 125 rolls.

PACKING PAPER

Chas. Happel, Black Condor, Rotterdam, 3 cs.

WRAPPING PAPER

Walker Goulard Plehn Co., City of Fairbury, Helsingfors, 2312 rolls, 153 bls..

DRAWING PAPER

Japan Paper Co., American Banker, London, 1 cs.; Favor Ruhl & Co., Aurania, Southampton, 7 cs.

FILTER PAPER

P. H. Petry & Co., A. Ballin, Hamburg, 100 bls.; Eastman Kodak Co., American Banker, London, 1 cs.; H. Reeve Angel & Co., Inc., Aurania, Southampton, 6 cs.

PHOTO PAPER

American Express Co., A. Ballin, Hamburg, 58 cs.; J. J. Gavin & Co., Olympic, Southampton, 5 cs.

METAL COATED PAPER

K. Pauli Co., A. Ballin, Bremen, 14 cs.; K. Pauli Co., Deutschland, Bremen, 8 cs.

BARYTA COATED PAPER

Globe Shipping Co., A. Ballin, Bremen, 32 crates; L. A. Consmiller, Deutschland, Bremen, 6 cs.

SURFACE COATED PAPER

Hensel Bruckman & Lorbacher, A. Ballin, Bremen, 2 cs.; Gevaert Co. of America, Black Tern, Antwerp, 28 cs.; Chas. Happel, Washington, Hamburg, 1 cs.

BASIC PAPER

Globe Shipping Co., A. Ballin, Bremen, 25 cs.

COLORED PAPER

International F'd'g Co., A. Ballin, Hamburg, 4 cs.; International F'd'g Co., Deutschland, Hamburg, 10 cs.

DECALCOMANIAS

Sellers Transportation Co., A. Ballin, Hamburg, 1 cs.; L. A. Consmiller, A. Ballin, Hamburg, 16 cs.; Sellers Transportation Co., Europa, Bremen, 43 cs.; Sellers Transportation Co., Deutschland, Hamburg, 4 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Antonia, Liverpool, 31 cs. (duplex); B. F. Drakenfeld & Co., Antonia, Liverpool, 1 cs. (Simplex).

TRACING PAPER

C. Bruning & Co., A. Ballin, Bremen, 33 cs.; Titan Shipping Co., A. Ballin, Bremen, 11 cs.

TRANSFER PICTURES

———, Europa, Bremen, 10 cs.

GUMMED PAPER

Meadows Wye & Co., Olympic, Southampton, 8 cs.

BLOTTING PAPER

J. & H. Berge, Antonia, Liverpool, 2 cs.

STENCIL PAPER

———, A. Ballin, Bremen, 2 cs.; Drytyoe Stencil Co., Komaki Maru, Yokohama, 6 cs.

PASTE BOARD

Phoenix Shipping Co., Pr. Harding, Hamburg, 20 bls.; Phoenix Shipping Co., Washington, Hamburg, 30 bls.; ———, Deutschland, Hamburg, 28 bls.

MISCELLANEOUS PAPER

Keller Dorian Paper Co., Excambion, Marseilles, 4 cs.; Japan Paper Co., Tai Shan, Kobe, 13 cs.; H. Reeve Angel & Co., Inc., Tai Shan, Yokohama, 2 cs.; T. N. Fairbanks, Tai Shan, Yokohama, 7 cs.; Coty Processing Co., Champlain, Havre, 2 cs.; Atlantic F'd'g Co., Deutschland, Hamburg, 8 cs.; ———, Nojima Maru, Kobe, 5 cs.; T. N. Fairbanks, Nojima Maru, Yokohama, 7 cs.

BAGS, BAGGINGS, ETC.

Castle & Overton, Inc., Quaker City, Dundee, 67 bls. paper stock; ———, Quaker City, Dundee, 282 bls. paper stock; J. Cohen & Son Co., Inc., Quaker City, Dundee, 30 bls. paper stock; Banco Coml. Italiane Trust Co., Motomar, Genoa, 374 bls. bagging; S. Birkenstein & Son, Motomar, Barcelona, 72 bls. rags; ———, Motomar, Lisbon, 92 bls. bagging; A. W. Fenton, Inc., Collamer, Havre, 61 bls. rags; A. W. Fenton, Inc., Collamer, Havre, 35 bls. bagging; Leigh Textile Co., Collamer, Dunkirk, 25 bls. cotton waste; W. Steck & Co., Collamer, Dunkirk, 84 bls. flax waste; ———, Excambion, Alexandria, 15 bls. rags;

E. J. Keller Co., Inc., Excambion, ———, 50 bls. bagging; E. J. Keller Co., Inc., Excambion, ———, 373 bls. paper stock; E. J. Keller Co., Inc., Tai Shan, ———, 750 bls. paper stock; J. J. Ryan & Son, Tai Shan, Kobe, 175 bls. cotton waste; New England Waste Co., Tai Shan, Kobe, 200 bls. cotton waste; J. Cohen & Son, Inc., Antonia, Liverpool, 12 bls. rags; Chase National Bank, Bilderdyk, Rotterdam, 10 bls. bagging; C. H. Powell, Bilderdyk, Rotterdam, 83 bls. cotton waste; ———, Bilderdyk, Rotterdam, 102 bls. rags; ———, Washington, Hamburg, 5 bls. paper stock; ———, Washington, Havre, 33 bls. rags; E. J. Keller Co., Inc., Western Prince, ———, 31 bls. new cuttings; Castle & Overton, Inc., Winona County, Dublin, 67 bls. paper stock; ———, H. Jaspar, Antwerp, 20 bls. cotton waste; Darmstadt Scott & Courtney, Exporter, Genoa, 106 bls. rags; Chase National Bank, Exporter, Barcelona, 147 bls. rags; E. J. Keller Co., Inc., Exporter, ———, 230 bls. rags; E. J. Keller Co., Inc., Schodack, ———, 45 bls. paper stock.

BONE GLUE

———, A. Ballin, Hamburg, 120 bags.

OLD ROPE

S. Birkenstein & Son, Montreal City, Bristol, 44 coils.

CHINA CLAY

English China Clays Sales Corp., Antonia, Liverpool, 267 bags; Orbis Products Trading Co., Antonia, Liverpool, 344 bags.

CASEIN

———, A. Ballin, Hamburg, 30 bags; ———, Deutschland, Hamburg, 60 bags.

WOOD PULP

———, Pr. Harding, Hamburg, 150 bls. wood pulp, 16 tons; Castle & Overton, Inc., A. Ballin, Hamburg, 695 bls. wood pulp, 139 tons; J. Andersen & Co., Bergensfjord, Sarpsborg, 150 bls. sulphite; The Borregaard Co., Inc., Bergensfjord, Sarpsborg, 288 bls. sulphite; J. Andersen & Co., Bergensfjord, Oslo, 1460 bls. sulphite; Irving Trust Co., Bergensfjord, Oslo, 1320 bls. mechanical pulp; Perkins Goodwin & Co., Bergensfjord, Drammen, 550 bls. sulphite; ———, Giulia, Trieste, 100 bls. wood pulp; E. J. Keller Co., Inc., Washington, ———, 322 bls. wood pulp, 49 tons; M. Sone, Washington, Hamburg, 1191 bls. wood pulp, 184 tons; M. Sone, City of Fairbury, Helsingfors, 750 bls. sulphite, 125 tons; Lagerloef Trading Co., City of Fairbury, Helsingfors, 3105 bls. sulphite, 551 tons; Castle & Overton, Inc., Deutschland, Hamburg, 825 bls. wood pulp, 165 tons.

WOOD PULP BOARDS

Lagerloef Trading Co., City of Fairbury, Helsingfors, 46 bls., 72 rolls.

BOSTON IMPORTS

WEEK ENDING APRIL 6, 1935

E. J. Keller Co., Inc., Tai Shan, ———, 200 bls. rags; ———, Black Condor, Rotterdam, 133 rolls straw boards; M. Sone, Capulin, Hamburg, 322 bls. wood pulp; Bulkley Dunton & Co., Quaker City, ———, 125 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 6, 1935

Castle & Overton, Inc., Quaker City, London, 24 bls. rags; ———, Quaker City, London, 8 bls. rags; E. J. Keller Co., Inc., Quaker City, ———, 322 bls. wood pulp, 50 tons; ———, Quaker City, Hamburg, 320 bls. wood pulp, 49 tons; ———, Quaker City, Dundee, 58 bls. paper stock; E. J. Keller Co. Inc., Collamer, ———, 65 bls. rags; National Vulc. Fibre Co., Collamer, Havre, 82 bls. rags; Castle & Overton, Inc., Collamer, Havre, 283 bls. rags; Castle & Overton, Inc., Collamer, Dunkirk, 166 bls. flax waste; ———, Satartia, B. Ayres, 34 bags casein; English China Clays Sales Corp., Montreal City, Bristol, 1169 tons 9 cwt china clay; Moore & Munger, Montreal City, Bristol, 814 tons 6 cwt china clay; Philadelphia Natl Bank, Tai Shan, Kobe, 100 bls. cotton waste; Continental Bank Trust Co., Tai Shan, Kobe, 350 bls. cotton waste; E. J. Keller Co. Inc., Tai Shan, ———, 200 bls. cotton waste; Castle & Overton, Inc., Winona County, Glasgow, 93 bls. new cuttings; Philadelphia National Bank, Exporter, Barcelona, 61 bls. rags; Lagerloef Trading Co., City of Fairbury, Helsingfors, 1692 bls. sulphite, 296 tons; Lagerloef Trading Co., City of Fairbury, Helsingfors, 262 bls. sulphate, 52 tons; Lagerloef Trading Co., City of Fairbury, Helsingfors, 260 bls. mechanical pulp, 52 tons.

CAMDEN IMPORTS

WEEK ENDING APRIL 6, 1935

Lagerloef Trading Co., City of Fairbury, Helsingfors, 3500 bls. sulphate, 584 tons.

WILMINGTON IMPORTS

WEEK ENDING APRIL 6, 1935

Lagerloef Trading Co., City of Fairbury, Helsingfors, 3081 bls. sulphite, 616 tons.

BALTIMORE IMPORTS

WEEK ENDING APRIL 6, 1935

Washington Post, Markland, Liverpool, N.S., 2783 rolls newsprint; R. J. Reynolds Tobacco Co., Boschdyk, Rotterdam, 1278 cs. cigarette paper; Castle & Overton, Inc., Boschdyk, Rotterdam, 760 bls. wood pulp; National City Bank, Boschdyk, Rotterdam, 364 bls. rags; ———, Boschdyk, Rotterdam, 180 bls. rags; Congoleum Nairn Co., Black Tern, Antwerp, 299 bls. rags; Congoleum Nairn Co., Winona County, Glasgow, 114 bls. rags; Bulkley Dunton & Co., City of Baltimore, ———, 125 bls. wood pulp; National City Bank, Exporter, Marseilles, 914 bls. rags; Congoleum Nairn Co., Schodack, Dunkirk, 163 bls. rags; Congoleum Nairn Co., Schodack, Havre, 815 bls. rags.

NORFOLK IMPORTS

WEEK ENDING APRIL 6, 1935

———, Quaker City, Dundee, 31 bls. paper stock; English China Clays Sales Corp., Montreal City, Bristol, 424 tons 10 cwt china clay; Moore & Munger, Montreal City, Bristol, 359 tons 18 cwt china clay; E. J. Keller Co. Inc., Black Tern, ———, 206 bls. flax waste; N. Y. Trust Co., Black Tern, Antwerp, 117 bls. bagging; Darmstadt Scott & Courtney, Black Tern, Antwerp, 166 bls. flax waste.

NEWPORT NEWS IMPORTS

WEEK ENDING APRIL 6, 1935

———, City of Hamburg, Hamburg, 1250 bls. chemical pulp, 252 tons; Bulkley Dunton & Co., City of Baltimore, ———, 750 bls. wood pulp.

HOUSTON IMPORTS

WEEK ENDING APRIL 6, 1935

E. J. Keller Co. Inc., Michigan, ———, 62 bls. bagging.

NEW ORLEANS IMPORTS

WEEK ENDING APRIL 6, 1935

E. J. Keller Co. Inc., Jomar, ———, 173 bls. paper stock.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 10, 1935.

Conditions in the local paper market are fairly satisfactory. Demand for the various standard grades of paper is persistent for the time of year. Sales forces of the leading paper organizations are continuing their strenuous efforts to create new business. Prices are generally holding to schedule.

The position of the newsprint paper market is practically unchanged. Manufacturing operations are proceeding in sufficient volume to take care of current requirements. Advertising lineage so far this year has shown an increase over the record of the corresponding period last year. The price situation continues unsatisfactory.

Trading in the fine paper market is fairly brisk and demand for book, cover, writing and ledger papers is well sustained. Tissues are moving into consumption at a good pace for the season. The coarse paper market is exhibiting a stronger undertone. Box board is in moderate request. Paper board prices are firm.

Mechanical Pulp

The ground wood pulp market is practically marking time. Production in the United States, Canada and abroad is being maintained in satisfactory volume and as the output is keyed to consumption, as far as possible, the statistical position of the industry is considered sound. Prices remain unchanged.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Demand for the various grades of domestic and imported chemical pulp has been fairly active since the recently revised quotations were announced. Kraft pulp continues to display strength, with demand brisk and offerings limited. No further price changes have been recorded.

Old Rope and Bagging

The old rope market is irregular. Demand for both domestic and imported old manila rope is only moderately active. Small mixed rope, also, is rather quiet. Prices generally remain unchanged. The bagging market is fairly steady, influenced to some extent by the French embargo. Roofing bagging is stronger.

Rags

Some improvement transpired in the domestic rag market. Demand for new cotton rags is more active, with No. 1 white shirt cuttings showing particular strength. Roofing rags continue steady. The imported rag market is quiet, with offerings of French and German rags scarce. Prices are nominal, in most instances.

Waste Paper

The paper stock market is rather listless. Board mill interest in the lower grades of waste paper is lacking at present, although no further price changes have been reported. The higher grades of waste paper are steady. Hard white envelope cuttings and hard and soft white shavings are holding up well.

Twine

Demand for the various varieties of twine is well maintained thanks to the approach of the Easter holidays and the increased consumption of wrapping paper. Competition for desirable orders continues keen. Inquiries for future account are numerous. Prices are generally holding to previously quoted levels.

Eastern States Carton Corp. Moves

The Eastern States Carton Corporation on April 1 moved its entire plant and offices to greatly enlarged quarters at 75 Front Street, Brooklyn, N. Y. Announcement to this effect was made by Alexander S. Israels, vice-president and production manager.

The plant was formerly located at 1 Main street, Brooklyn. The new location contains 100,000 square feet of space for the company's equipment which has been doubled. In addition, it offers the facility of railroad sidings running into the building itself.

The increased space will make possible the installation of new equipment and additional improvements planned by the company. The rapid growth of the company in recent years, and its prospect of further expansion, dictated the decision of the Company to find new and larger quarters where it could continue its service policy for its customers.

To Rebuild Paper Mill in Cuba

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 10, 1935—A new paper plant is to be constructed in Cuba to replace the one that was destroyed by fire May 31, 1934, according to a statement by one of the officials of the company, who states further that most of the $400,000 to be received from the insurance companies will be expended in building the new mill, as stated in a report from Commercial Attache Walter J. Donnelly, Habana. The company is undecided at this time whether it will resume the manufacture of board as well as paper.

Buys and Will Reopen Cheboygan Mill

KALAMAZOO, Mich., April 8, 1935—The North American Pulp and Paper Corporation has purchased the closed Cheboygan Paper Mill of Cheboygan, Mich., and announced that it would begin manufacturing operations there in 90 days. Tissue pattern paper will be produced for a pattern company of New York with which the paper company is affiliated.

Pyro Surface Pyrometers

The Pyrometer Instrument Company, 103 Lafayette street, New York, has just issued its new bulletin No. 60 which illustrates and describes the Pyro surface pyrometers, which embody many advance features said not to be found in similar instruments. Many interesting features regarding the Pyro surface pyrometers are described in the new bulletin which may be had free upon application.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, April 10, 1935.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market. Shipments against contract are going forward in moderate volume. Prices remain unchanged. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is firm. Domestic standard ground is quoted at 12½ and finely ground at 13; Argentine standard ground at 13 and finely ground at 13¼, and French standard ground at 13¼ and finely ground at 13½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is moderately active. The contract movement is fairly good. Prices are steady. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3 to $3.05 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is fairly active. Contract shipments are moving freely. Prices are firm. Imported china clay is quoted at from $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE.—The chlorine market is exhibiting a strong undertone. Prices are holding to formerly quoted levels, without difficulty. Chlorine is selling at from $2 to $2.40 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is marking time. Paper making gum rosin is quoted at $4.35 and wood rosin at $4.40 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.55 per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is well sustained. Prices remain unchanged. Salt cake is quoted at from $12 to $13 and chrome salt cake at from $11 to $12 per ton, at works. Imported salt cake is selling at from $12 to $13 per ton, on dock.

SODA ASH.—The soda ash market is rather quiet at present. Inquiries for future account are numerous, however, and the outlook is bright. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—The starch market is firmer. Demand from the paper mills is fairly brisk. The contract movement is well up to average. Special paper making starch is now quoted at $3.57 per 100 pounds, in bags; and at $3.84 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Some improvement is noticed in the sulphate of alumina market. Prices are steady to firm. Commercial grades are quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05, per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Conditions in the talc market are fairly satisfactory. Prices are holding to formerly quoted levels. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines. The foreign talc siutation is unchanged.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.35	@	5.75
S. & S. C. Litho.	5.60	@	6.00
M. F.	5.10	@	5.50
Coated and Enamel	5.90	@	6.55
Coated Litho	5.90	@	6.55
Tissues—Per Ream—			
White No. 1	.82½	@	.85
White No. 2	.67½	@	—
Anti-Tarnish M. G. only	1.00	@	—
Colored	.85	@	—
Kraft	.70	@	—
Manila	.67½	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	4.00	@	4.50
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.50	@	3.50
Glassine—			
Bleached	.11	@	—
Unbleached	.09	@	—

(The following Quotations are Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Kraft—			
No. 1 Northern	4.12½	@	4.75
Standard	4.00	@	—
Southern	3.87½	@	—
Boards—per ton—			
News	40.00	@	45.00
Chip	37.50	@	40.00
Sgl. Mla. Ll. Chip	45.00	@	47.50
Jute Lined Chip	45.00	@	47.50
White Patent Coated	55.00	@	57.50
Binders Boards	67.00	@	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	21.00	@	22.00
Dry	21.00	@	22.00
(F.o.b. Mill)			
No. 1 Domestic and Canadian	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Division 1	2.60	@	—*
Division 2	2.55	@	—*
Division 3	2.50	@	—*
Prime Qualities—			
Class 1. All Prime Easy Bleaching	2.05	@	—*
Other Than Easy Bleaching—			
Class 2. Higher Than Standard	2.00	@	—*
Class 3, Standard	1.95	@	—*
Class 4. Lower than Standard	1.90	@	—
(On Dock, Atlantic Ports)			
Kraft No. 1	1.70	@	1.80
Kraft No. 2	1.50	@	1.60
(F.o.b. Pulp Mill)			
Kraft Domestic	1.70	@	2.35
(Delivered)			
Soda Bleached	2.50	@	—

*Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.00
Silesias No. 1	3.75	@	4.00
New Unbleached	6.25	@	6.50
New Soft Blacks	3.00	@	3.25
Blue Overall	3.50	@	3.75
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	1.20	@	1.30
No. 2	1.10	@	1.15
No. 3	.95	@	1.00
No. 4	.95	@	1.00
No. 5A	.80	@	.85

Foreign Rags

New Rags

New Dark Cuttings	1.75	@	1.85
New Mixed Cuttings	1.80	@	1.90
New Light Silesias	3.75	@	4.00
Light Flannelettes	3.75	@	4.00
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.56	@	6.75
New Light Oxfords	2.25	@	2.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.90	@	2.15
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.75	@	1.85
French Blue Linens	2.30	@	2.40
German Blue Linens	2.15	@	2.25
German Blue Cottons	1.70	@	1.80
Checks and Blues	1.30	@	1.40
Linsey Garments	1.50	@	1.65
Dark Cottons	1.15	@	1.25
Old Shopperies	1.00	@	1.05
New Shopperies	.95	@	1.05
French Blues	1.70	@	1.90

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.40	@	1.50
Wool Tares, light	1.40	@	1.50
Wool Tares, heavy	1.50	@	1.60
Bright Bagging	1.40	@	1.50
Manila Rope—			
Foreign	1.85	@	2.00
Domestic	1.75	@	2.00
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	2.00	@	2.25
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.60	@	2.70
Ordinary Hard White No. 1	2.10	@	2.15
Hard White No. 2	1.90	@	2.00
Soft White No. 1	1.70	@	1.80
Flat Stock—			
Stitchless	.65	@	.75
Over issue Mag.	.65	@	.75
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.65
Ledger Stock	1.00	@	1.10
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.70	@	1.80
New Cuttings	1.35	@	1.45
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.60	@	.65
Strictly Folded	.25	@	.30
No. 1 Mixed Paper	.15	@	.20

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Twines
(F. o. b. Mill)

Coarse Polished—			
India	.11¼	@	.13½
Belg. White Hemp	.12¼	@	.15¾
India Compress	.11¼	@	.12¼
Fine Polished—			
Fine India	.18½	@	.20½
Special	.16½	@	.18½
B. C.	.25½	@	.27½
Unpolished—			
Box	.10	@	.10½
Paper Makers	.07	@	.12
Tube Rope	.08	@	.13½
Wall Paper	.09	@	.12½
Wrapping	.12	@	.17
Special	.12	@	—
Soft Fiber Rope	.10¼	@	.10¾

CHICAGO

Paper
(F. o. b. Mill)

Bag Bond	.12	@	.50
Water Marked Sulphite Bond	.06¼	@	.11
Sulphite Bond	.05½	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	48.50
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
Mixed Papers—			
No. 1	.15	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(Delivered Philadelphia)

Bonds	.05-9/10	@	.38
Ledgers	.06 9/10	@	.40
Writings—			
Fine No. 3	.05	@	.06
Superfine	.10	@	.18
Extra Fine	.15	@	.20
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Book, M. F.	.05¼	@	.06¼
Book, S. S. & C.	.05½	@	.07½
Book, Coated	.06½	@	.09
Coated Lithograph	.06¾	@	.08½
Label	.07	@	.11
No. 1 Jute Manila	6.25	@	—
Manila Sul., No. 1	5.25	@	—
Manila No. 2	3.75	@	—
No. 1 Kraft	5.00	@	—
Southern Kraft	4.75	@	—
Common Bogus	.03	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.40	@	1.75
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.25	@	1.30
No. 1 Mixed	—	@	.75
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.00	@	1.10
No. 1 Books, heavy	.55	@	.60
No. 1 New Manila	1.35	@	1.40
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.00	@	—
No. 1 Mixed Paper	.20	@	—
Straw Board Chip	.20	@	—
Binders Board Chip	.20	@	—
Corrugated Board	.40	@	—
Overissue News	.50	@	—
Old Newspapers	.30	@	—

BOSTON

Paper
(F o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.07¼	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06½
Manila, Sul. No 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.04½	@	.04¾
(F. o. b. Boston)			
Southern Kraft	.03¾	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼
(Delivered New England points)			
News Print Rolls	39.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Chip Board (Creasing)	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.75	@	—
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.95	@	1.05
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.60	@	.65
White Blank News	1.15	@	1.20
No. 1 Kraft	.95	@	1.00
Mixed Papers	.17½	@	.20
Print Manila	.40	@	.45
Container Manilas	.25	@	—
Overissue News	.45	@	.50
Old Newspapers	—	@	.27½
Box Board Chips	..	@	.25
Corrugated boxes	.35	@	.40
Screening Wrappers	.40	@	.45

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	1.70	@	1.80
Domestic	1.90	@	2.00
Transmission Rope	.90	@	1.00
Mixed Strings	.30	@	.35
Jute Rope	1.35	@	1.40
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.25	@	1.35
Bleachery Burlap	4.00	@	4.50
Scrap Burlap	1.05	@	1.15
Scrap Sisal	1.00	@	1.10
Scrap Sisal for Shredding	1.10	@	1.25
Wool Tares, heavy	1.25	@	1.30
New Burlap Cuttings	1.45	@	1.50
Australian Wool Pouches	2.00	@	2.25
Heavy Baling Bagging	1.40	@	1.50
Paper Mill Bagging	.90	@	1.10
Bagging No. 2	.50	@	.55

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.05½	@	.06
New White No. 2	.03½	@	.04
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.05½	@	.06
Blue Cheviot	—	@	4.65
Fancy	.0185	@	.0191
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03¼	@	.03½
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.03
B.V.D. Cuttings	—	@	.04¾

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	3.00
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	2.00	@	2.75
Miscellaneous	2.00	@	2.25
Black Stockings	2.50	@	3.00
Roofing Stock			
No. 1	1.17½	@	1.23¾
No. 2	.92½	@	1.00
No. 3	.72½	@	.90

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.00	@	1.10
New White Shirt Cuttings	5.50	@	6.00
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	1.35	@	1.45

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¾	@	—
No. 2 Colored	.09	@	.10
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	½	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Lithe	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber M. F.	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	39.50	@	—
Sheets	42.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.30
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	.60
Kraft	1.00	@	1.20
News and Scrap—			
Strictly Overissue	.60	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06	@	—
Fancy Shirt Cuttings	.02	@	—

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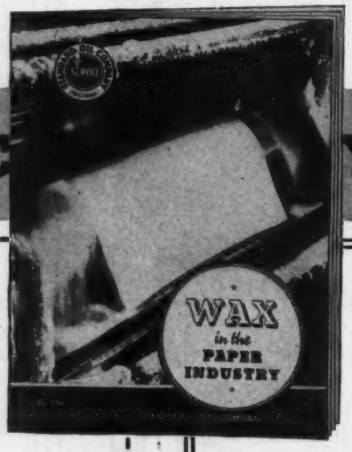

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